NAME: Pratt + Whitney
I.D. NO.: CTD 990672081
FILE LOC: A-113
OTHER: RDMS #2566

ADDITIONS AND MODIFICATIONS FOR RCRA PART B PERMIT APPLICATION

UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY
400 MAIN STREET
EAST HARTFORD, CT 06108

RDMS DocID 2566

CTD 990672081

PREPARED BY

LOUREIRO ENGINEERING ASSOCIATES
100 NORTHWEST DRIVE
PLAINVILLE, CT 06062
COMM. NO. 971-10

REVISION NO. 2: JANUARY 31, 1991

NAME: Pratt Whitney
I.D. NO.: CTD990672081
FILE: R-1B
OTHER:

SCHEDULE FOR INCORPORATING ADDITIONS AND MODIFICATIONS FOR PRATT & WHITNEY'S EAST HARTFORD RCRA PART B PERMIT APPLICATION

REVISION NO. 2: JANUARY 31, 1991

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SECTION B - FACILITY DESCRIPTION	5 AND 6	5 AND 6
	FIGURE B-3	FIGURE B-3
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UNITED TECHNOLOGIES
PRATT&WHITNEY

400 Main Street
East Hartford, Connecticut 06108

January 31, 1991

Ms. Lynn M. Clune
Engineer
Waste Engineering & Enforcement Division
Department of Environmental Protection
165 Capitol Avenue
Hartford, Connecticut 06106

Ref: 1 RCRA Part B Application Additions and Modifications
Pratt & Whitney East Hartford CTD990672081

2 Letter D. Nash, to R. Weiss, dated 12/7/90

Dear Ms. Clune:

In response to Reference 2 above we are submitting to you one (1) copy of the RCRA Part B Permit Application additions and modifications for the Pratt & Whitney facility at 400 Main Street, East Hartford, Connecticut. An instruction page for inserting the revisions, into the 11/13/90 version of reference 1 above, is included. A copy of these revisions is being mailed to John Podgurski, U. S. EPA.

As you are aware, many of the requested revisions per reference 2 were pending the finalization of the conceptual design report for the proposed Waste Storage Facility. The conceptual design report is being submitted as Appendix D-4. Also, changes have been made to the Closure Plan, Process Information and Contingency Plans, for the proposed Waste Storage Facility.

Waste barrel management practices are continually being revised. This includes on line computer tracking of waste barrels within the manufacturing facility. Identification, consolidation, and standardization of barrel management stations for less than ninety day storage and point of generation accumulation is also ongoing. This will mean that the Contingency Plan will change as areas are added or deleted.

The Closure Plan in Section H now incorporates the new Waste Storage Facility and those existing facilities which will continue to conduct permitted activities.

The program to redesign our hazardous waste training is on schedule and is expected to be completed by July 1991. The program will be implemented in the third quarter 1991. We will transmit a revision to the Part B Application as soon as possible.

We are continuing to pursue additional information and will submit it when it becomes available. The following table summarizes the RCRA Application and the changes we are anticipating:

	Significant Modifications Anticipated
Section A - Part A Application	No
Section B - Facility Description	No
Section C - Waste Analysis Plan	No
Section D - Process Information	No
Section E - Procedures to Prevent Hazards	No
Section F - Contingency Plan	Yes[1]
Section G - Personnel Training	Yes[2]
Section H - Closure	No

Notes:

1 The Contingency Plan is currently undergoing an evaluation for revision. Changes in less than ninety day and point of generation storage areas will impact this plan.

2 The P&W Training Program and associated administrative systems are being revised.

Thank you for your cooperation and assistance. If you have any questions, please contact Paul Guilmette at 557-0900.

Very truly yours,

R. C. Weiss, Director
Facilities & Services

RCW/PGG

cc: John Podgurski, USEPA - Letter & Application Revisions
George Dews, CTDEP - Letter only
David Nash, CTDEP - Letter only

RESOURCE CONSERVATION AND RECOVERY ACT
PART B PERMIT APPLICATION
UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY
400 MAIN STREET
EAST HARTFORD, CT
CTD 990672081

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EXHIBIT A-1

RCRA PART A APPLICATION

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0034 Expires 12-31-91
GSA No. 0246-EPA-GE

For EPA Regional Use Only

EPA

United States Environmental Protection Agency
Washington, DC 20460

Hazardous Waste Permit Application Part A

(Read the instructions before completing)

For State Use Only

Date Received
Month Day Year

Permit Number(s)

I. EPA I.D. Number

C T D 9 9 0 6 7 2 0 8 1

II. Name of Facility

P R A T T & W H I T N E Y

III. Facility Location (Physical address; not P.O. Box or Route Number)

Street

4 0 0 M A I N S T R E E T

Street (continued)

City or Town

E A S T H A R T F O R D

State: C T

ZIP Code: 0 6 1 0 8 -

County Code (if known)

County Name

H A R T F O R D

III. Land Type: C

C. Geographic Location

LATITUDE (degrees, minutes, & seconds): 4 1 4 5 0 0 N

LONGITUDE (degrees, minutes, & seconds): 7 2 3 8 0 1 W

D. Facility Existence Date

Month Day Year: 1 9 3 0

IV. Facility Mailing Address

Street or P.O. Box

S A M E

City or Town

State

ZIP Code

V. Facility Contact (Person to be contacted regarding waste activities at facility)

Name (last)

W E I S S

(first)

R A L P H

Job Title

D I R F A C & S E R V

Phone Number (area code and number)

2 0 3 - 5 6 5 - 4 8 8 7

VI. Facility Contact Address (See instructions)

A. Contact Address Location: X Mailing:

B. Street or P.O. Box

City or Town

State

ZIP Code

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form approved. OMB No. 2050-0... EPA No. 3246-EPA-...

Secondary ID Number (enter from page 1)
C T D 9 9 0 6 7 2 0 8 1

Facility Name (from instructions)

U N I T E D T E C H N O L O G I E S C O R P

Street, Route, or P.O. Box	State	ZIP Code
		-

B. Operator Type	C. Change of Operator Indicator	Date Changed (Month / Day / Year)
P	Yes	No X	

Operator Name (from instructions)

S A M E A S O P E R A T O R

Street, Route, or P.O. Box	State	ZIP Code
		-

Primary Facility SIC Code (4 digit, in order of significance)		
Primary		Secondary
3 7 2 4 (description) Jet Engine Manufacturer		(description)
Secondary		Secondary
(description)		(description)

X. Other Environmental Permits (see instructions)

A. Permit Type (enter code)	B. Permit Number	C. Description
N	C T 0 0 0 1 3 7 6	
E	5 3 - 0 0 1 7	CT EMISSIONS PERMIT
E	5 3 - 0 0 1 8	" " "
E	5 3 - 0 0 1 9	" " "
E	5 3 - 0 0 2 0	" " "
E	5 3 - 0 0 2 2	" " "
E	5 3 - 0 0 2 4	" " "
E	5 3 - 0 0 2 7	" " "
E	5 3 - 0 0 4 7	" " "

C	T	D	9	9	0	6	7	2	0	8	1

Manufacture Jet Engines and Parts

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	DISPOSAL:	
D79	INJECTION WELL	GALLONS; LITERS; GALLONS PER DAY; OR LITERS PER DAY
D80	LANDFILL	ACRE-FEET OR HECTARE-METER
D81	LAND APPLICATION	ACRES OR HECTARES
D82	OCEAN DISPOSAL	GALLONS PER DAY OR LITERS PER DAY
D83	SURFACE IMPOUNDMENT	GALLONS OR LITERS
	STORAGE:	
S01	CONTAINER (barrel, drum, etc.)	GALLONS OR LITERS
S02	TANK	GALLONS OR LITERS
S03	WASTE PILE	CUBIC YARDS OR CUBIC METERS
S04	SURFACE IMPOUNDMENT	GALLONS OR LITERS
	TREATMENT:	
T01	TANK	GALLONS PER DAY OR LITERS PER DAY
T02	SURFACE IMPOUNDMENT	GALLONS PER DAY OR LITERS PER DAY
T03	INCINERATOR	SHORT TONS PER HOUR; METRIC TONS PER HOUR; GALLONS PER HOUR; LITERS PER HOUR; OR BTU'S PER HOUR
T04	OTHER TREATMENT (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundment or incinerators. Describe the processes in the space provided in Item XIII.)	GALLONS PER DAY; LITERS PER DAY; POUNDS PER HOUR; SHORT TONS PER HOUR; KILOGRAMS PER HOUR; METRIC TONS PER DAY; METRIC TONS PER HOUR; OR SHORT TONS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
GALLONS PER HOUR	E
GALLONS PER DAY	U
LITERS	L
LITERS PER HOUR	H
LITERS PER DAY	V
SHORT TONS PER HOUR	D
METRIC TONS PER HOUR	W
SHORT TONS PER DAY	N
METRIC TONS PER DAY	S
POUNDS PER HOUR	J
KILOGRAMS PER HOUR	R
CUBIC YARDS	Y
CUBIC METERS	C
ACRES	B
ACRE-FEET	A
HECTARES	Q
HECTARE-METER	F
BTU's PER HOUR	K

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

C	T	D	9	9	0	6	7	2	0	8	L

hold 200 ... X-2 below. A facility has two storage tanks, one tank can ... This facility also has an incinerator that can burn up to 20 gallons per hour.

				C. PROCESS TOTAL NUMBER OF UNITS			FOR OFFICIAL USE ONLY
		B. AMOUNT (specify)	B. UNIT OF MEASURE (enter code)				
P	T		G	0	0	2	
P	Z		E	0	0	1	
S	0	1	68,000	G			
S	0	2	126,000	G			

... sheet(s) with ... used for ...

A. PROCESS CODE	B. TREATMENT ... (specify)	C. PROCESS	D. DESCRIPTION OF PROCESS
T	0	4	
T	0	4	
T	0	4	

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

C	T	D	9	9	0	6	7	2	0	8	1

Description of Hazardous Wastes

A. EPA HAZARDOUS WASTE NUMBER - Enter the four-digit number from 40 CFR, Part 261 Subpart D of the appropriate listed hazardous waste that will be handled. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261 Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in Column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If your records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure before taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

D.1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item XII A. on page 3 to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item XII A. on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. Enter the first two as described above.
2. Enter "000" in the extreme right box of Item XIV-D.
3. Enter in the space provided on page 7, Item XIV-E, the line number and the additional code(s).

D.2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form (page 7).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM XIV (shown in the numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA HAZARD WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESS (1) PROCESS CODES (enter)	D. PROCESS (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				Included With Above

Form Approved. OMB No. 2050-0034 Expires 12-31-91
GSA No. 0248-EPA-OT

C	T	D	9	9	0	6	7	2	0	8	1

EPA Hazardous Waste No.	Estimated Annual Quantity	Unit of Measure	Process Codes	Process Description
F007	370*	T	S01 S02	
F008				Included with line 1
F009				"
P029				"
P030				"
P098				"
P104				"
P106				"
D001	6600	T	S01 S02	
D002				Included with line 8
D003				"
D004				"
D005				"
D006				"
D007				"
D008				"
D009				"
D010				"
D011				"
U133				"
U134				"
U188				"
U201				"
F001	370	T	S01 S02	
F002				Included with line 23
F003				"
F004				"
F005				"
U002				"
U019				"
U021				"
U031				"
U04[illegible]				"

C	T	D	9	9	0	6	7	2	0	8	1

	U	0	5	2														Included with line 23
	U	0	5	4														"
	U	0	5	5														"
	U	0	5	6														"
	U	0	7	7														"
	U	0	8	0														"
	U	1	0	8														"
	U	1	1	2														"
	U	1	2	1														"
	U	1	2	2														"
	U	1	3	8														"
	U	1	4	0														"
	U	1	4	4														"
	U	1	5	1														"
	U	1	5	4														"
	U	1	5	9														"
	U	1	6	1														"
	U	1	6	5														"
	U	2	1	0														"
	U	2	1	1														"
	U	2	2	0														"
	U	2	2	3														"
	U	2	2	6														"
	U	2	2	8														"
	U	2	3	9														"
	F	0	0	6	6000		P	S	0	1								

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Form Approved. OMB No. 2050-0039 Expires 9-30-91
GSA No. 0246-EPA-OT

C	T	D	9	9	0	6	7	2	0	8	1

Secondary ID Number (enter from page 1)

Line Number		D. PROCESSES (1) PROCESS CODES (enter)													(2) PROCESS DESCRIPTION (If a code is not entered in (1), enter a description.)
1		D	0	1	8	40,000	P	S	0	1	S	0	2		
2		D	0	2	2										Included with above
3		D	0	2	8										"
4		D	0	2	9										"
5		D	0	3	5										"
6		D	0	3	7										"
7		D	0	3	9										"
8		D	0	4	0										"
9		D	0	4	3										"
10		D	0	0	4	1	T	S	0	1	S	0	2		
11		D	0	0	5										Included with line 11
12		D	0	0	6										"
13		D	0	0	7										"
14		D	0	0	8										"
15		D	0	0	9										"
16		D	0	1	0										"
17		D	0	1	1										"
18		D	0	1	2										"
19		D	0	1	3										"
20		D	0	1	4										"
21		D	0	1	5										"
22		D	0	1	6										"
23		D	0	1	7										"
24		D	0	1	9										"
25		D	0	2	0										"
26		D	0	2	1										"
27		D	0	2	3										"
28		D	0	2	4										"
29		D	0	2	5										"
30		D	0	2	6										"
31		D	0	2	7										"
32		D	0	3	0										"
33		D	0	3	1										"

C	T	D	9	9	0	6	7	2	0	8	1

		D	0	3	2														Included with line 11
		D	0	3	3														"
		D	0	3	4														"
		D	0	3	6														"
		D	0	3	8														"
		D	0	4	1														"
		D	0	4	2														"

EPA I.D. Number *(enter from page 1)*											Secondary ID Number *(enter from page 1)*											
D	9	9	0	6	7	2	0	8	1													

escription of Hazardous Waste *(continued)*

USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 6.

Line Number	Additional Process Codes (enter)																											

XV. Map

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

hotographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

XVIII. Certification(s)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Owner Signature	Date Signed
Name and Official Title *(type or print)*	
Operator Signature	Date Signed
Name and Official Title *(type or print)*	

XIX. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (refer to instructions for more information)

Hazardous waste activities at this site are reclamation, transportation and storage. Concentrated and dilute industrial wastewaters are also treated on-site in an NPDES permitted treatment facility. Reclamation is the distillation of spent listed solvents which are generated on-site. P&W has a Hazardous Waste Management Permit (CT HW-264) issued by the Connecticut Department of Environmental Protection for transportation of hazardous waste. P&W transportation of hazardous wastes occurs only between P&W facilities although licensed waste haulers may also be used. Storage occurs for both on-site and off-site material while awaiting treatment or shipment to licensed waste disposal facilities. Treatment occurs by processing both concentrated and dilute wastewater solutions in the NPDES permitted facility.

The facility generates a variety of hazardous wastes. Currently, these wastes are managed in eleven (11) storage tanks (8 above ground and 3 underground) and five (5) container storage areas all located within an area known as the Concentrated Waste Treatment Plant (CWTP). Pratt & Whitney is planning to upgrade these facilities. Design work is in progress and construction is planned for 1991 with completion scheduled for March 1992. Only 2 of the existing storage areas (CWTP-5 & CWTP-6) will be used for RCRA permitted activities once the planned facility is complete. Therefore, this application covers only these two existing facilities and the planned Waste Storage Facility. Wastes generated on-site are also stored at various locations within the facility in containers and tanks for less than ninety (90) days.

The solvent reclamation operation at this site includes the distillation of 1,1,1-trichloroethane. Spent solvents are generated primarily from degreasing operations on-site.

Solvents for reclaim are collected in containers at the generating locations based on a preventative maintenance schedule and transported to the reclaim area. There the solvents are transferred into the feed tank at the Still. The feed tank holds 800 gallons. The solvents are distilled with the clean solvent going to a receiving tank which is piped to a bulk storage tank. The still bottoms are sent to the waste treatment area for storage.

The solvent reclaim area is located inside the factory building on a concrete floor which has a protective coating. Any spills occurring in this area would be contained. Planning is currently underway for the relocation of this facility.

2. Topographic Map

To obtain an accurate topographic map of the facility, aerial photographs were taken in April 1990 and used to produce overall facility mapping. This mapping does not extend 1000 feet beyond the facility boundary in all locations. Consequently, three maps are provided with this application to show the required information. Figure B-1 is a USGS map of an area extending at least 1000 feet beyond the facility property lines. Figure B-2 is a map of the entire facility developed from aerial photography at a scale of 1 inch equals 200 feet. Figure B-3 is a map of the Concentrated Waste Treatment Plant at a scale of 1 inch equals 40 feet. This map encompasses the entire area within which the RCRA permitted facilities are located.

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] Oversized (in Site File) [ ] Oversized (in Map Drawer)

[ ] Page(s) Missing (Please Specify Below)

[ ] Potential FOIA Exempt [ ] Other (Please Provide Purpose Below)

Description of Oversized Material, if applicable:

Figure B3: Site Plan 11/12/1990

[X] Map [ ] Photograph [] Other (Please Specify Below)

* Please Contact the EPA New England RCRA Records Center to View This Document *

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] Oversized (in Site File) [ ] Oversized (in Map Drawer)

[ ] Page(s) Missing (Please Specify Below)

[ ] Potential FOIA Exempt [ ] Other (Please Provide Purpose Below)

Description of Oversized Material, if applicable:

Figure B6: Site Plan Buried Piping & Utilities 11/12/1990

[X] Map [ ] Photograph [] Other (Please Specify Below)

* Please Contact the EPA New England RCRA Records Center to View This Document *

RESOURCE CONSERVATION AND RECOVERY ACT
PART B PERMIT APPLICATION
UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY
400 MAIN STREET
EAST HARTFORD, CT
CID 990672081

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VOLUME II

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SECTION D - PROCESS INFORMATION

1. Purpose

The purpose of this section is to present the specific process information required for waste management in the existing facilities which will remain active after construction of the planned Waste Storage Facility and to present conceptual design information and proposed operational procedures for the planned facility. The planned facilities for storage of hazardous wastes are currently in design. These facilities will replace the existing system for handling, transfer and storage of hazardous wastes in containers as well as in tanks with the exception of two existing facilities (CWTP-5 & CWTP-6) which will continue to be used for storage of hazardous waste in containers. The facilities designated CWTP-1 thru CWTP-4 will not be used for activities requiring a RCRA permit.

A site plan showing the location of the existing and planned hazardous waste management facilities is presented in Appendix D-1. The existing facilities are part of the Concentrated Waste Treatment Plant (CWTP). Only the two storage buildings designated CWTP-5 and CWTP-6 will be used for RCRA permitted Hazardous Waste Management activities once the planned Waste Storage Facility has been constructed. The bulk of these activities however, will be performed in the planned waste storage facility once construction is completed. Appendix D-2 shows floor plans of CWTP-5, CWTP-6. A floor plan for the planned waste storage facility is included in the conceptual design report for this facility presented in Appendix D-4.

2. General Description of Facilities

a. Existing Facilities

The existing hazardous waste management facilities at the Pratt & Whitney East Hartford Plant are located at the CWTP. The two facilities are briefly described in this subsection as an overview. References to "containers" in this Section are meant to include all types of containers including drums, barrels and transporters as discussed subsection 8a in Section D.

CWTP-5 (Storage Building A)

- This is a building for cleaning of various materials; for weighing and marking of containers; for storage of new chemicals; for storage of hazardous wastes in containers; for repair of equipment or containers; for storage of new containers; for lab pack preparation; and for PCB storage.

CWTP-6 (Storage Building B)

- This is a building for storage of hazardous waste in containers.

b. Construction Drawings

Applicable construction drawings for the existing facilities are being submitted with this application for CWTP-5 and CWTP-6. These drawings are presented in Appendix D-6 in the following order:

For CWTP-5 (Storage Building A)

Pre-Designed Structures Inc., United Technologies - 40.

Sheet A-1 - Plan & Elevations (6-7-89 Rev. 10-26-89).

Sheet A-2 - Wall Sections (9-28-89 Rev. 10-26-89).

Sheet F-1 - Foundation Plan, Sections and Details (6-7-89 Rev. 9-28-89).

For CWTP-6 (Storage Building B)

Pre-Designed Structures Inc., United Technologies - 20

Sheet A-1 - Plan, Elevations & Wall Sections (10-1-89).

Sheet F-1 - Foundation Plan, Section & Details (10-1-89).

c. Other Construction Information

Appendix D-3 presents available information on protective coatings applied to various surfaces in the existing facilities.

d. Planned Facilities

A planned waste storage facility will be constructed in the immediate vicinity of the existing CWTP. A copy of the conceptual design report for this facility is presented in Appendix D-4. The conceptual design report includes a description of the planned facilities, the wastes which will be managed in the facility, a schedule for construction of the facility, etc.

e. Guidelines for Waste Barrel Management

Pratt & Whitney Container Distribution Center has begun operation allowing P&W greater control in managing hazardous and non-hazardous wastes and related containers. The center will track all waste containers bound for disposal at the Concentrated Waste Treatment Plant in East Hartford (CWTP).

The new container distribution process performed by Container Distribution Center will effect the following changes:

1. Containers will be issued pre-labelled and internally pre-manifested, with liners when appropriate. The label and manifest will be generated from the Industrial Waste Tracking

System (IWIS) which will assign a six (6) digit code to the transaction (container/manifest issuance).

2. The generating departments' responsibility for completing the internal waste manifest/labels will be to complete the "Full Date" and the "Accumulation Start Date".

Container Distribution Center may issue the label/manifest with the accumulation start date completed based on previous knowledge of the waste stream and/or storage area involved. However, if the accumulation date is left blank at issuance, the generating department will complete the accumulation start date with the same date as the full date. As before, the call to CWTP for pick-up of the full container should be made the same day the container becomes full.

3. Use of new container labels.

4. Container Distribution Center will issue one six digit lot code, which will encode the labels and internal waste manifest, per request per waste stream (i.e. different EPA waste streams will have separate manifests).

5. A reminder system will be activated once a call is made to CWTP for pick-up, tickling the removal of the waste based on the type of storage area and the "Full Date" on the container.

6. Wastes will be tracked through Waste Transfer from one P&W facility to Waste Disposal and Split/Move/Repackaging, by using the six digit code on the container and manifests. The CWTP will be able to follow each container to ultimate disposal.

3. Traffic

The site plan in Appendix D-1 shows traffic patterns at the existing CWTP. Typically tanker trucks and box trailers making deliveries of waste from other United Technologies plants will enter the site through the road south of the planned Waste Storage Facility to Willow Street and out through guard post 8 east of the Maintenance Building. All transporters (and at times other types of containers) from other United Technologies plants will be unloaded from box trailers in the planned Waste Storage Facility. Transporters will be unloaded from trailers with fork lift trucks which move the transporters to the unloading stations within the facility.

Wastes from the East Hartford plant will be received in containers using fork lift trucks entering the site via the road south of the planned Waste Storage Facility. Barrels will typically be delivered directly to the planned Waste Storage Facility although if necessary, the containers will be placed in storage at CWTP-5 or CWTP-6. Transporters will be either taken directly to the unloading stations at the planned Waste Storage Facility or placed in temporary storage at CWTP-5 or CWTP-6.

4. Drainage

a. Existing Site

All facilities are designed to prevent run-on. In all cases grades around buildings and structures are sloped away from the facility. Building foundations are extended above grade. Roof drainage from CWTP-5 and CWTP-6 is piped directly into a catch basin

connected to the storm drainage system. Catch basins are located east of CWTP-1, south of CWTP-2 and northwest of CWTP-3. These are all connected to various storm drain systems discharging into Willow Brook north of the site. The existing storm drainage system is shown on the site plan in Appendix D-1.

b. Improvements

There will be no major changes in drainage at the site upon completion of the planned facilities. The design of the planned facilities will prevent run-on and roof drainage from the building will discharge directly into the storm drainage system. The planned construction will require that storm drainage in the area be modified.

5. CWTP-5 Facility

The CWTP-5 facility consists of a pre-engineered, weather-tight, heated metal building with a concrete floor slab. The building is used for storage of waste in containers and for several related activities such as weighing of containers, labeling of containers, cleaning of various materials and for repair of equipment or containers. A cleaning tank and containment pit are provided in the center bay of the structure. The floor of this bay and the two end bays are pitched from high points to three sumps formed of welded steel plates. The slab at the high points and at the perimeter curbs has a waterstop. The floor, sumps and curbs are coated with Ceilgard 630 (See Appendix D-3).

The curbs are above grade and the pavement at the truck approach to the building is sloped away to prevent run-on. Data on construction of this facility is presented in Appendix D-6. A plan of the facility is shown in Appendix D-2.

The three bays of the building provide containment for storage of waste in containers. The containment volumes are calculated from the high point elevation of the floor to the sump; the high point of the floor is six inches below the entrance and the perimeter curb. Therefore, a separate calculation of containment volume is presented for the condition where all wastes stored in the building are compatible and containment would be available to the top of the curb rather than only to the high points in the floor.

The containment volume calculations are as follows for the three separate containments:

All sumps: 18" x 18" x 18" deep; Volume = 1.5 x 1.5 x 1.5 x 7.48 = 25 gals.

Size of area No. 1: 25'-4" x 43'-6" x 3" floor pitch to sump

Volume = (1/3 x 25.33 x 43.5 x 0.25 x 7.48) + 25 = 711 gals.

Size of area No. 2 (does not include pit): 32'-9" x 26'-8" x 3" floor pitch to sump

Volume = (1/3 x 32.75 x 26.67 x 0.25 x 7.48) + 25 = 569 gals.

Size of area No. 3: Same as No. 1 except delete area for scale room

Delete for scale room: 12' x 7'-6" x 1-1/4" pitch

Volume = 1/3 x 12 x 7.5 x 0.1 x 7.48 = 67 gals.

Net volume for Area No. 3 = 711 -67 = 644 gals.

The containment volume calculations are as follows for the entire curbed area considered as one containment:

At entrance floor pitches down 6 inches over a distance of 5 feet for a length of 66'-8"; this volume is:

1/2 x 5 x 0.5 x 66.67 x 7.48 = 623 gals.

The remainder of the floor provides a six-inch depth of containment in addition to that calculated above for each containment bay. The area is 43'-6" x (25'-4" + 26'-8" + 25'-4") less 7'-6" x 12' for the scale room; this volume is:

((0.5 x 43.5 x 77.33)-(7.5 x 12)) x 7.48 = 11910 gals.

The total containment is as follows (ignoring the soak tank and its containment pit):

711 + 569 + 644 + 623 + 11910 = 14460 gals.

6. CWTP-6 Facility

The CWTP-6 facility consists of a pre-engineered, weather-tight, heated metal building with a concrete floor slab. The building is used for storage of waste in containers. There are three separate concrete containments each with a curb and ramped entrance and a sump formed of welded steel plates. The floor, sumps and curbs are coated with Ceilgard 630 (See Appendix D-3). The curbs are above grade and the pavement at the truck approach to the building is sloped away to prevent run-on. Data on construction of this facility is presented in Appendix D-6.

A plan of the facility is shown in Appendix D-2.

Three concrete containments are provided for storage of transporters or containers on pallets. Each containment is 22 ft-4 inches from front to rear and a pitch of six inches is provided down six feet from the entrance. The rear 16 feet-4 inches is level except for a three-inch pitch to a sump 18" x 18" x 18" deep. The widths of the three containments are 18 feet, 39 feet and 18 feet. This provides containment volumes as follows:

Each sump = 1.5 x 1.5 x 1.5 x 7.48 = 25 gals.

Containment Nos. 1 and 3:

((0.5 x 0.5 x 6 x 18) + (1/3 x 16.33 x 18 x 0.25) + (16.33 x 18 x 0.5)) x (7.48) + 25 = 1510 gals.

Containment No. 2:

((0.5 x 0.5 x 6 x 39) + (1/3 x 16.33 x 39 x 0.25) + (16.33 x 39 x 0.5)) x (7.48) + 25 = 3240 gals.

7. Planned Waste Storage Facility

The planned waste storage facility is currently in the design stage of its development. A conceptual design report has been prepared for this facility, a copy of which is presented as Appendix D-4.

This report contains the most detailed information currently available regarding the planned facility. Consequently, this information is not repeated herein. However, in general terms,

the facility will provide for the storage and handling of wastes in containers and tanks within a fully enclosed building totaling approximately 50,000 square feet. Loading and unloading operations will take place within the facility in fully contained areas. The facility will provide for the management of 5 groups of compatible waste in tanks and 9 groups of compatible waste in containers. All storage areas will be provided with adequate containment as described in the conceptual design report. The facility is scheduled for completion in March 1992 with partial beneficial occupancy of the northern portion of the building for storage of drummed waste possible in late December 1991.

8. Container Storage

a. Types of Containers

Several types of containers are used for storage of hazardous wastes. All containers are DOT-approved and all are compatible with the wastes stored in them. The most commonly used containers are 55-gallon steel barrels, 20-gallon fiber drums, 375-gallon steel transporters and 200-gallon polyethylene transporters. Containers are lined as necessary for chemical resistance to the wastes stored in them. All drums and barrels used for storage of hazardous waste are new.

Fifty-five gallon drums are typically DOT 17C, 17E, or 17H or 6D.

The 375 gallon transporters are lined with materials

compatible with their respective contents. It should be noted that these transporters comply with DOT Specification 60 except that the ends of the transporters are bolted rather than welded as prescribed by 49CFR 178.225-1(a). Because of this, an exemption from DOT hazardous materials regulatory requirements has been obtained. These containers are being phased out and will be replaced with commercially available DOT approved portable tanks of similar sizes.

Other sizes of containers are in use and new types of containers are being acquired in several different sizes and materials of construction to improve container management and to facilitate handling. All such containers will be DOT approved and will be compatible with the wastes placed in them.

b. Handling of Containers

Containers are typically moved by fork lift truck. Containers are generally strapped to pallets. Typical arrangements include four 55-gallon barrels on a 48-inch square pallet and six fiber drums on a pallet 2'-8" x 4'-0". Transporters are designed to be lifted directly by fork lift truck.

Pallets are six inches high to elevate containers off the floor of the containment. The tank portion of transporters is 6 to 12 inches above the base supports.

Containers from other United Technologies facilities are received by box trailer and are unloaded by fork lift truck.

Vendors trucks are used to ship wastes off-site for treatment and disposal; these are also loaded by fork lift truck.

c. Types of Wastes

The types of wastes handled are described in Section C of this application. Containers will be generally segregated in storage based on the following categories:

- Acids
- Alkali compatible
- Acid oxidizers/chrome
- Oxidizers
- Ignitibles
- Organics
- Cyanide metal and salts
- Miscellaneous
- PCB

d. Marking and Labeling

CWTP personnel are responsible for supplying the appropriate waste containers to departments generating hazardous wastes. Before a container is supplied to a generating department, CWTP personnel place all stick-on labels required by state and federal regulations for waste accumulation, storage, and shipment on the container.

A new computerized waste tracking system is being planned. Labels will be generated by computer and a bar code identification system will be instituted to track all containers from time of delivery to final disposition of the wastes.

e. Distribution and Pickup of Containers

The generator makes a telephone request for one or more containers. The following information is obtained:

- Waste Type Generic Description (proper shipping name)
- Container Quantity
- Department
- Supervisor's Name and Phone Number
- Location (include column #)
- PMC/PS/PWA numbers (product or solution from which the waste was generated)

This information is used to determine the type and labeling of containers which are then delivered to the generator by CWTP personnel. When ready for pickup the generator informs CWTP personnel who pick up the containers.

f. Accumulation

Up to 55-gallons of hazardous waste or one quart of acutely hazardous waste are allowed to accumulate at or near the point of generation providing that the following requirements are met.

- the containers are in good condition
- the waste is compatible with the container
- the container remains closed except when waste is being added or removed
- the container is clearly marked with the words "Hazardous Waste" and the contents are clearly identified
- The dates accumulation began and container became full appear on the Hazardous or Non-hazardous waste labels attached to the container

In general, once these quantities of waste are exceeded, the containers are moved to the planned Waste Storage Facility within 72 hours.

g. Containers With Free Liquids

Wastes with free liquids will generally be transferred to the bulk storage tanks at the planned waste storage facility whenever possible so that they can be (1) treated at CWTP-1, or (2) sent to a vendor by tanker truck. Therefore, the number of containers in storage with free liquids will be limited. Generally most of these wastes will be delivered to the planned waste storage facility in transporters. Fiber drums will not be used for waste with free liquids.

h. Use of Container Storage Areas

There are two existing container storage facilities available at the CWTP. These have been described in subsections D-5 and D-6. They include a total of 6 areas as follows:

- CWTP-5 three containment areas
- CWTP-6 three containment areas

Typically these six areas are used in the manner shown on the floor plans in Appendix D-2. These areas may be used with other arrangements of containers (See Appendix D-5). Also the six areas are not permanently designated to contain particular waste types. Instead, a system of securely fastened waste identification signs will be used to ensure that at any given time, all wastes within a particular section are compatible. The container storage capacity and arrangement of containment areas in the planned waste storage facility are described in the conceptual design report in Appendix D-4.

When the waste type assignment for a particular storage compartment is changed, the compartment will first be inspected for signs of contamination. If contamination is found, the compartment will be decontaminated by scrubbing and washing using appropriate cleaning solutions to remove all visible residue. The wash water will be pumped into appropriate containers for disposal.

Section E of this application covers related matters on incompatibles.

Wastes are stored in the container storage areas with their covers securely fastened, but additional wastes may occasionally be added to containers already placed in storage. However, liquid wastes are frequently removed from containers and transferred to bulk storage tanks.

A visual inspection of all containers of waste is made prior to acceptance at the facility to ensure the following:

(1) Wastes are in appropriate containers
(2) Waste containers are properly labeled
(3) Waste containers are not damaged or leaking
(4) Waste containers are tightly closed

Containers to be shipped off-site will generally be stored in the planned waste storage facility while awaiting shipment.

The contents of the container storage facilities are/will be inspected on a weekly basis. A more detailed description of these weekly inspections is presented in Section F of this application.

i. Management of Containments

Containments are inspected in accordance with the inspection plan. Deficiencies noted on inspections are corrected. If liquids are found, a sample is obtained and tested for pH and other parameters as appropriate to that containment (e.g. cyanide in a cyanide containment). A portable pump and hoses are used to remove the liquid into a transporter for transfer into the appropriate bulk storage tank.

9. Storage In Tanks

The planned Waste Storage Facility includes a total of 21 aboveground tanks, 6,000 gallons each in secondary containments. A description of each of these tank systems is included in the conceptual design report presented in Appendix D-4. This report includes available information on the procedures which will be used to manage waste in tanks once the facility has been constructed.

APPENDIX D

Designation	Title	Content
D-1	Concentrated Waste Treatment Plant-Site Plan	Topographic plan at 1"=40' w/1-foot contours shows drainage patterns to Willow Brook and traffic at the CWTP site

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] Oversized (in Site File) [ ] Oversized (in Map Drawer)

[ ] Page(s) Missing (Please Specify Below)

[ ] Potential FOIA Exempt [ ] Other (Please Provide Purpose Below)

Description of Oversized Material, if applicable:

Figure D1: Site Plan Traffic & Drainage 11/12/1990

[X] Map [ ] Photograph [] Other (Please Specify Below)

* Please Contact the EPA New England RCRA Records Center to View This Document *

APPENDIX D

Designation	Title	Content
D-2	Concentrated Waste Treatment Plant-Floor Plans	Floor plans of CWTP-5 & 6 at 1/8"=1'-0" showing typical uses of the components

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] Oversized (in Site File) [ ] Oversized (in Map Drawer)

[ ] Page(s) Missing (Please Specify Below)

[ ] Potential FOIA Exempt [ ] Other (Please Provide Purpose Below)

Description of Oversized Material, if applicable:

Figure D2: Floor Plans 11/12/1990

[X] Map [ ] Photograph [] Other (Please Specify Below)

* Please Contact the EPA New England RCRA Records Center to View This Document *

APPENDIX D

Designation	Title	Content
D-3	Information on Linings and Coatings	Coatings for CWTP-5 and CWTP-6

APPENDIX D-3
COATINGS FOR CWTP-5 AND CWTP-6

The following pages present data on the coatings used on curbs, sumps and floors at CWTP-5 and CWTP-6. Included are Ceilcote products:

Ceilgard Flake Prime 675
Ceilgard 630

CONCRETE SURFACE PREPARATION
AND
CONTAINMENT COATING APPLICATIONS

PREPARATION

- Open concrete floor surfaces were prepared by shotblasting. A "Blastrac" machine was used to perform shotblasting and vacuuming of the resulting concrete dust and shot.
- Concrete edges and corners were prepared using rotary sanding machine with very course sanding disks.
- Steel containment sumps were prepared by sandblasting.
- Floor joints, expansion joints and cracks were routed and filled with a chemical resistent caulking material. See Attachment A for a description of the caulking material.

COATING APPLICATION

- The initial coating functions as a primer/sealer. Ceilgard Flake prime 675 was the material used and it was applied to both steel and concrete surfaces using brushes or rollers. This coat was allowed to cure overnight prior to the finish coatings.
- A total of two finish coats (Ceilgard 630) were applied to both steel and concrete surfaces. The first coat, referred to as the "body coat", was fortified with silica aggregate to provide a non-skid surface. This was followed by a straight finish coat. Refer to Attachments B and C for manufacturer technical specifications for each coating.
- The primer coat is dark reddish brown and the finish coats are a light lime green. The two tone combination should be used to assess coating wear.

CONTRACTOR

DESCO Products of Connecticut, Inc.
P. O. Box 522
West Haven, CT 06516
(203)932-2271

s-s6h

ATTACHMENT A

SPEC DATA

This Spec-Data Sheet conforms to editorial style prescribed by The Construction Specifications Institute. The manufacturer is responsible for technical accuracy.

1. PRODUCT NAME

Bostik Chem-Calk® 500 Non-Sag or Chem-Calk® 550 Self-Leveling Traffic Grade Two-Component Polyurethane High Performance Elastomeric Joint Sealant

2. MANUFACTURER

Bostik Construction Products Division
Emhart Fastening Systems Group
P.O. Box 8
County Line & New Roads
Huntingdon Valley, PA 19006
Phone: (800) 523-6530
(215) 674-5600 (In PA)

3. PRODUCT DESCRIPTION

Chem-Calk® 500 non-sag or 550 self-leveling sealant is a two-component polyurethane sealant capable of dynamic joint movement totaling 50% of original joint geometry (±25%).

Basic Uses:

Chem-Calk® 500 non-sag sealant is designed for sealing expansion and control joints in precast concrete panels and metal curtain walls; perimeter sealing of door and window framing and other building components.

Chem-Calk® 500 polyurethane sealant may be factory-applied to seal shop finished products or field-applied to seal erected building components in both new and remedial applications.

Chem-Calk® 550 self-leveling polyurethane sealant is designed for sealing expansion, control and perimeter joints in parking decks, pavements, plazas, malls, patios, driveways, factory and institutional floors or any other areas subject to foot and light vehicle traffic.

The sealant cures to form a durable, flexible, watertight bond with most building materials in any combination: stone, masonry, ceramics, marble, wood, steel, aluminum, and many plastics. In many cases no primer is required.

Some substrates have variable surface characteristics depending on their source. The unpredictability of such surface characteristics makes it desirable to have a Pretested Adhesion to Substrates Test (PATS Program) on appropriate samples.

Application Limitations:

a) Chem-Calk® 500 or 550 sealant is *not recommended for use in sealing* submerged joints, particularly where porous surfaces permit water infiltration to bond surfaces.

b) Chem-Calk® 500 or 550 sealant is not recommended for exterior or interior structural sealing below the waterline in marine applications.

c) Chem-Calk® 500 or 550 sealant should not be applied with wet tooling techniques; using solvents, water or detergent/soap solutions is not recommended.

d) Chem-Calk® 500 or 550 sealant should not be applied to surfaces with special protective or cosmetic coatings without prior consultation of the manufacturer. Such surfaces include, but are not limited to, mirrors, reflective glass, or surfaces coated with Teflon™, polyethylene or polypropylene.

e) Chem-Calk® 500 or 550 sealant should not be applied to unpredictably absorptive surfaces such as marble, limestone or granite unless a standard of appearance has been agreed on as a result of testing for stain and/or discoloration.

f) Chem-Calk® 500 or 550 sealant cures by chemical means. The prepolymer system used can be affected by water before or during cure. The sealant should not be stored, applied or cured in areas where unusually high humidity or free water are present during the application or initial cure.

g) Chem-Calk® 500 non-sag sealant is *not recommended for use in sealing* horizontal decks, patios, driveway or terrace joints where abrasion or physical abuse is encountered. (Chem-Calk® 550 self-leveling is recommended for these applications.)

Food Status:

Chem-Calk® 500 or 550 has no food status. (See Chem-Calk® 1200 or Chem-Calk® 1000 Silicone Sealant, or Chem-Calk® 900 Polyurethane Sealant.)

Composition and Materials:

Chem-Calk® 500 or 550 polyurethane sealant has a smooth, creamy consistency that is easy to mix and gun. Its physical properties will remain stable over time and in severe weather conditions. Physical properties are relatively unchanged over a wide temperature range, -20°F to 150°F (-29°C to 66°C).

Priming may not be required for masonry, aluminum, steel and many common building materials (See Priming). If sealant is to be applied to a material with specially treated surfaces or of particularly unusual surface characteristics, consult Bostik for primer recommendation.

In all cases where doubt may exist, a sample should be tested. A trial installation placed on the actual project site is always recommended.

Packaging:

Chem-Calk® 500 or 550 polyurethane sealant is available as 1.5 gal. (5.68 liter) in a two gallon pail, with curing agent container and the appropriate color pack inside the pail. The packages are designed to be lightweight for easy transport to the job site.

Colors:

Chem-Calk® 500 or 550 is available in the following standard colors:

White	Stone
Limestone	Med. Bronze
Black	Tan
Antique White	Bronze

Chem-Calk® 500 or 550 may be custom matched to virtually any color using the Color Pack system. Chem-Calk® 500 non-sag uses Color Pack II; Chem-Calk® 550 self-leveling uses Color Pack III. **Color Pack II and III are not interchangeable;** each must be used with the appropiate sealant.

Color	CC500NS	CC550SL
Alum/Stone	#88 II	#88 III
Limestone	#58 II	#58 III
White	#75 II	#75 III
Stone	#92 II	#92 III
Mortar	#12 II	#12 III
Off White	#11 II	#11 III
Tan	#85 II	#85 III
Gray	#70 II	#70 III
Med. Bronze	#61 II	#61 III
Bronze	#64 II	#64 III

Bostik
Bostik Construction Products Division
November 1986
7
JOINT SEALERS | Two-Component; Polyurethane

Applicable Standards:

Chem-Calk® 500 or 550 sealant meets or exceeds the test requirements of TT-S-227 (COM-NBS) for two-component sealants as Class A, Type I & II Non-Sag; and conforms to ASTM C920-79 Standard Specification for Elastomeric Joint Sealants as Type M, Grade SL/NS, Class 25, Use T/NT, G, A and M; Canadian Specification 19-GP-24.

4. TECHNICAL DATA

Chem-Calk® 500 or 550 polyurethane sealant is virtually unaffected by normal weathering conditions such as rain, sunlight, snow, sleet, ultraviolet radiation, ozone, atmospheric contamination and pollution. Its excellent weatherability enables it to retain its original properties after years of exposure.

Joints formed with Chem-Calk® 500 or 550 sealant can be expected to extend and compress a total of 50% of the installation width with no more than 25% movement in a single direction without affecting the seal or adhesive bond. See Table 1. Typical adhesion values for common construction surfaces are in Table 2.

TABLE 1: CHEM-CALK® 500/550 — TYPICAL PROPERTIES*
(after 7 days cure at 77°F and 50% R H)

Property	Value	Test Method
Hardness (A Scale)	35	ASTM D 2240
Modulus @100%	75 ppi	ASTM D 412
Tensile Strength	230 psi	ASTM D 412
Adhesion in Peel	>12 ppi	ASTM C 794
Stain and Color Change	None	ASTM C 510
Ozone Resistance	Excellent	
Joint Movement Capability	±25%	ASTM C 719
UV Resistance	Good	ASTM C 793

*Values given above are not intended to be used in specification preparation.

TABLE 2:
CHEM-CALK® 500/550 — ASTM C 794 ADHESION IN PEEL TO COMMON CONSTRUCTION SURFACES*

Surface	Pounds Per Inch	Failure Type and %
Ceramic Tile	18	Cohesive — 100
Concrete**	16	Cohesive — 50
Brick	16	Cohesive — 50
Granite	12	Cohesive — 10
Marble**	10	Adhesive — 100
Limestone	16	Cohesive — 50
Mill Finished Aluminum	12	Cohesive — 10
Anodized Aluminum	12	Cohesive — 10
Steel	10	Adhesive — 100
Galvanized Steel	10	Adhesive — 100
Stainless Steel**	4	Adhesive — 100
Fiberglas	10	Adhesive — 100
Rigid PVC**	5	Adhesive — 100
Plywood	18	Cohesive — 100

*Values given above are not intended for use in specification preparation.
**With primer, value is >18. Cohesive — 100.

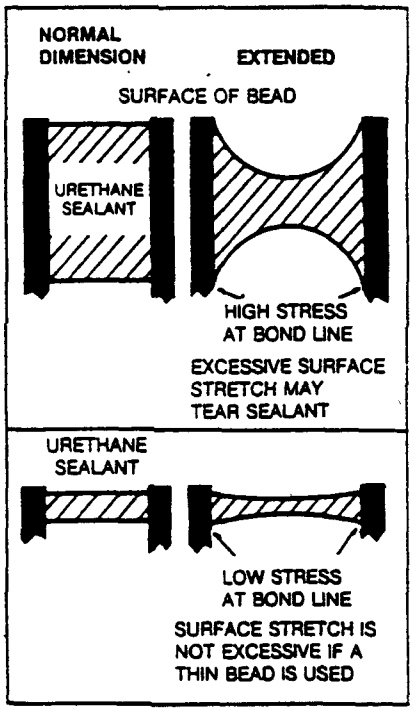
5. INSTALLATION

Joint Design:

More joint movement can be accommodated in a thin bead of sealant than in a thick bead. Chem-Calk® 500 or 550 polyurethane sealant should be no thicker than ½" (12.7 mm) and no thinner than ¼" (6.4 mm). The ratio of joint width to sealant depth should be approximately 2:1 for joint width of greater than ½" but less than or equal to 1" (25.4 mm).

Principles of Joint Design: *Figure 1* illustrates why a thin bead of sealant will accommodate more movement than a thick bead. Obviously, the thin bead is the most desirable. Sealants usually need be no thicker than ½" (12.7 mm) and no thinner than ¼" (6.4 mm). *Figure 2* illustrates a second critical principle. The use of a bond breaker prevents undesirable three-sided adhesion.

FIGURE 1
DESIGN



Polyurethane (e.g. Denver Foam™) or polyethylene foam rod is the recommended back-up material for deep joints; polyethylene tape for joints too shallow to allow foam rod. These materials allow a bead of sealant to be applied and obtain two-sided adhesion, which will maximize a sealant's extension and compression capability. *See Figures 3 and 4.*

FIGURE 2
BOND BREAKER

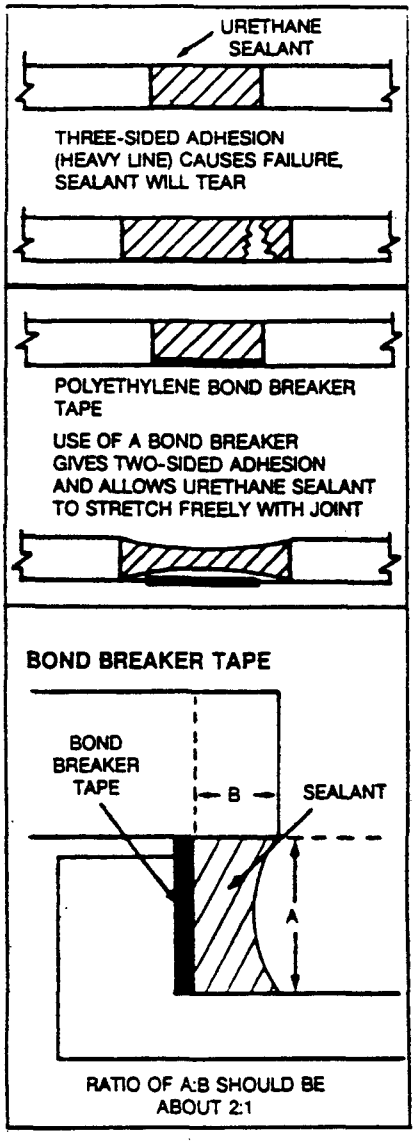
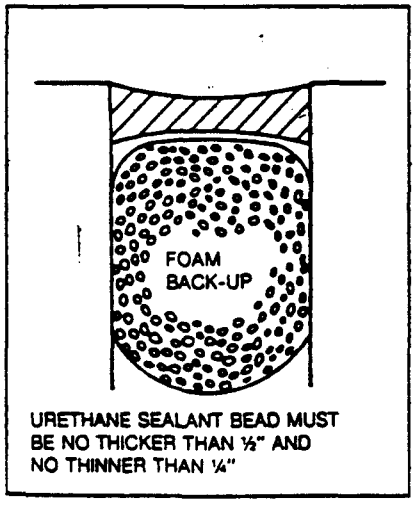


FIGURE 3
TYPICAL JOINT DETAIL



Under certain conditions, the use closed cell type back-up materials can result in bubble formation and deformation in the surface of the sealant bead. This usually does not affect the performance of the sealant, but can be unattractive. The use of open cell back-up materials minimizes this condition.

In remedial work where it is impossible to remove old, failed sealant and restore the surfaces to a like-new condition, the band-aid approach may be utilized. A bond breaker tape is applied to bridge over the existing joint and old sealant so that the tape extends beyond the edges of the original joint. This also has the effect of increasing the joint width and decreasing the percentage movement that the sealant must accommodate. The technique is also useful in new construction where the designed width is determined to be inadequate for the actual movement. *See Figure 5.*

FIGURE 4
TYPICAL JOINT DETAILS

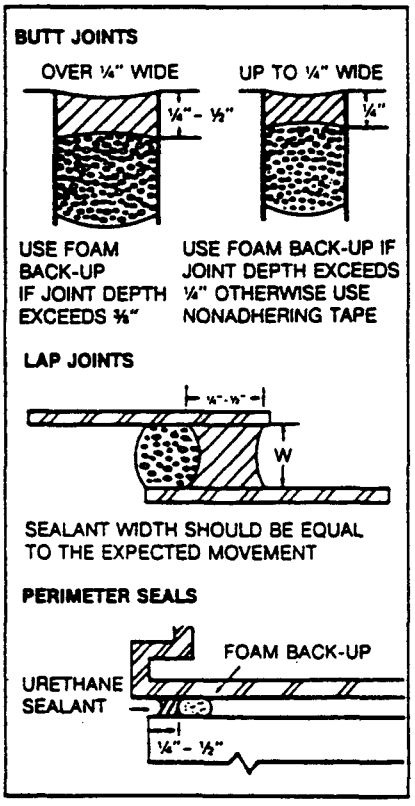
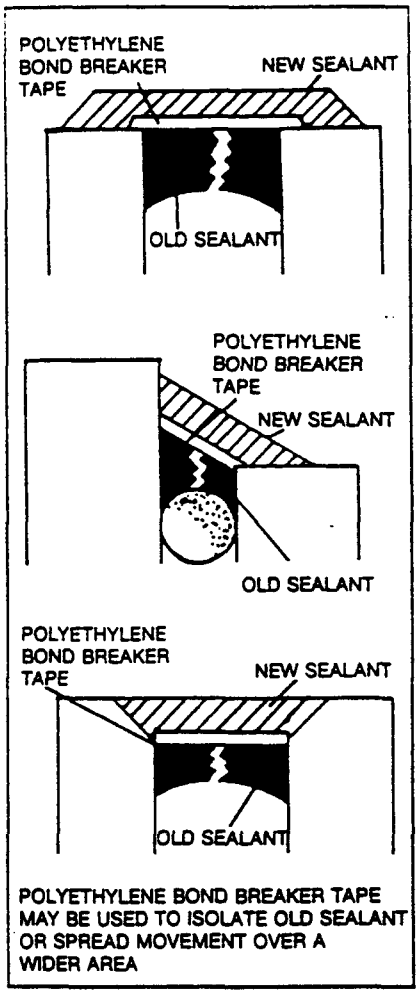
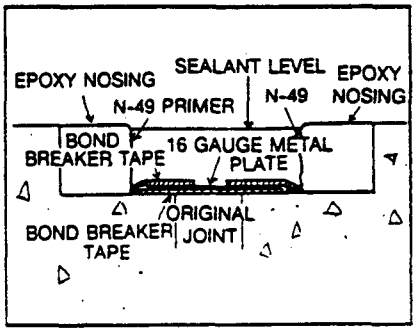


FIGURE 5
BAND-AID METHOD



The "T" joint is a recommended remedial method for use in horizontal joints that have the Chem-Calk® 550 self-leveling grade installed. Many times horizontal joints are encountered that place too much strain on the sealant for a successful long-term installation. In such cases the remedy, whether performed at the time of the original installation or as a part of the remedial work, is one of increasing the joint width until the yearly movement is 20-25% of the total joint width. See Table 3 for the recommended joint widths for various length spans of concrete.

FIG. 6 "T" JOINT



The step by step procedure for properly installing a "T" joint in concrete construction is:

1. The "T" joint should be sawed or preformed as illustrated in concrete that is fully cured, dry and sound.
2. The edges of the concrete should be sandblasted and blown clean to provide a sound concrete surface to which to bond a sand filled epoxy nosing.
3. Apply an excellent quality sand filled epoxy to form an epoxy nose. Bevel the edge of the joint as shown to eliminate spalling of the sharp corner under traffic. Allow the epoxy to thoroughly cure according to the manufacturer's recommendation.
4. Sandblast the epoxy nosing and blow clean.
5. Apply Chem-Calk® Bond-Breaker Tape as shown.
6. Apply 16 gauge stainless or aluminum plate in joints exceeding 2" (51 mm) wide. The plate should be 75% of the width of the joint. Again apply two strips of Chem-Calk® Bond-Breaker Tape as shown on top of the plate allowing a break in the center equal to 25% of the width or 1/2" (12.7 mm) maximum to allow the sealant to bond.
7. Prime the epoxy nosing with Bostik CPD's N-49 Primer, allowing it to dry to the touch.
8. Mix the Chem-Calk® 550 according to the instructions and pour into the joint to a level 1/8" (3.2 mm) below the surface of the top of the joint. Allow the Chem-Calk® 550 to completely cure before exposing to traffic.

The longevity of on or below grade sealant installations subject to traffic or extended water immersion conditions will be less than those exposed to no traffic, intermittent water immersion or similar above grade installations.

Joint Dimensions:

The width of building expansion joints vary due to seasonal and daily changes in temperature. Chem-Calk® 500 or 550 polyurethane sealant should be installed when the design width is approximately halfway between the dimensional extremes, typically at 65°F to 80°F.

Joint width should not be less than ¼" (6.4 mm). The joint depth must allow a sealant depth, after installation of bond breaker material, of a minimum of ¼" (6.4 mm). Lap shear joints should have a bead width equal to, or greater than twice the anticipated movement.

TABLE 3: Recommended Joint Widths for Concrete Spans

Joint Spacing	Total Joint Movement 150° Temp. Change	Minimum Opening at Median Temperature Precast/Poured in Place	Post-Tensioned
Feet	**Inches**	**Inches**	**Inches**
35	0.18	1.4	1.75
45	0.25	1.8	2.25
55	0.33	2.2	2.75
65	0.40	2.6	3.25
75	0.47	3.0	3.75
85	0.54	3.4	4.25
95	0.61	3.8	4.75

APPROX. LINEAR FEET PER 1½ GALLON UNIT

Depth, Inches	Width, Inches								
		⅛"	¼"	⅜"	½"	⅝"	¾"	⅞"	1"
	⅛"	1848	924	615	462	369	308	264	231
	¼"		412	308	231	185	153	132	116
	⅜"			204	153	123	102	87	77
	½"				116	92	77	66	57

Small chainwall panels should allow a minimum width of ¼" (6.4 mm) for the sealant bead. Sealing of panels fabricated from plastic requires larger than usual joint dimensions due to plastic's higher co-efficient of thermal expansion.

A conservative design practice, which uses a portion of the sealant's movement capability as a safety factor is recommended. Sealants are subject to cohesive failure when the actual movement is greater than their rated capability. Also, sealants applied under conditions resulting in less than optimum adhesion to the joint surfaces may fail adhesively within the limits of their rated capability. For all applications requiring a high degree of dynamic movement the designed joint width should be at least four times the total anticipated joint movement.

Preparatory Work:

Clean all joints by removing foreign matter and contaminants such as oil, dust, grease, frost, water, surface dirt, old sealants and any protective coating.

Porous substrates should be cleaned as necessary by grinding, saw cutting, blast cleaning (sand or water), mechanical abrading or a combination of these methods that will be required to provide a sound, clean and dry surface for sealant application. Dust, loose particles, etc., should be blown out of joints with oil-free compressed air or vacuum cleaned.

Non-porous and plastic surfaces should be cleaned by a solvent procedure or by mechanical means.

Detergent or soap and water cleaning treatments are not recommended. Protective films must be removed by a solvent recommended by the manufacturer of the component or other means that leave no residue. In all cases where used, solvents should be applied with one clean cloth or lintless paper towel and the solvent wiped clean with a second cloth or towel. Cleaning solvents should not be allowed to air dry or evaporate without being wiped. Architectural coatings, paints and plastics should be cleaned with a solvent approved by the manufacturer of that product.

Cleaning of all surfaces should be done on the same day in which the sealant is applied. CAUTION! SOLVENTS MAY BE FLAMMABLE AND ARE TOXIC.

Priming:

Chem-Calk® 500 non-sag polyurethane weather proofing sealant generally does not require priming except that joints subjected to intermittent water immersion should be primed with N-49 primer. Chem-Calk® 550 self-leveling sealant requires N-49 primer on concrete or N-40 primer on most metals. Joints must be thoroughly dry before applying primer

and sealant. If sealant is to be ...ied to a material with specially treated surfaces or of particularly unusual surface characteristics, consult Bostik for primer recommendations. Prior to any use, however, it is always recommended that a bead of sealant be applied on the surface to test adhesion. See Pretested Adhesion to Substrates Program.

Masking:

Masking should be done after priming to avoid wicking primer under tape applied on rough surfaces or tape that is not tightly adhered to the surface.

All areas adjacent to joints can be masked to assure a neat appearance. The masking tape should not be allowed to touch the clean surfaces to which the sealant is to adhere. Soon after sealant application and before a skin forms, tooling should be completed in one continuous stroke. **Remove masking tape immediately after tooling is completed.**

Mixing:

Chem-Calk® 500 or 550 is a multi-part sealant, provided as base, activator (or curing agent) and color pack. All the accelerator and appropriate color pack must be thoroughly mixed with the base to avoid uncured areas and/or color streaks. Failure to follow mixing instructions implicitly can result in spotty cure, random cure or complete lack of cure of the sealant. Do not attempt to mix partial units, as the exact ratio of curing agent to base is essential for optimum performance.

Mixing Instructions:

1. Remove the cover from the metal container. Remove the zip-top lid from the activator can and add the entire contents, scraping out all residue in the can. Add the entire contents of the accompanying Color Pack II or III.
2. Five minutes of thorough mixing is required to obtain optimum cure. Due to the critical nature of the mix, Bostik recommends the use of either a #230 Prop Mixer or the Bostik CPD #1 Mixing Paddle. Mix with a slow speed (80-150 rpm) drill, using either of the recommended mixing paddles for a full five minutes by the watch. Five minutes minimum are required to properly blend the color and activator into the sealant base. Use a timer to time your mixing. The color paste should all be blended into the sealant with no streaks. The material is improperly mixed if it is not uniform in color.
3. Stop at least once during mixing and scrape the bottom and sides of the container as well as the blades of the mixing paddle. Failure to follow mixing instructions implicitly can result in spotty cure, random cure or c... plete lack of cure.

The mixed sealant will have a three (3) hour to five (5) hour application/tooling time depending on temperature. Temperature has a direct bearing on the work life and cure rate of chemically curing sealants. High temperatures result in a shortened work life and cure rate, while low temperatures extend both.

Bulk caulking guns are used to install the sealant into the joints to be caulked. The mixed sealant may be drawn up into the bulk gun by inserting it into a follower plate and drawing the piston or using a spatula to load the gun. Special nozzle tips are available to dispense the sealant.

Method of Application:

Install back-up material or joint filler as specified. Apply Chem-Calk® 500 polyurethane sealant in a continuous operation using a positive pressure adequate to properly fill and seal the joint. Tool the non-sag grade sealant with adequate pressure to spread the sealant against the back-up material and onto the joint surfaces. A tool with a concave profile is recommended to keep the sealant within the joint.

The Chem-Calk® 550 self-leveling grade is pourable and seeks its own level. Tooling is usually not necessary. The self-leveling sealant should not be used in joints with more than a two degree slope. Also, check one-half hour or so after the sealant has been applied to be sure that no runout has taken place through voids in the bottom of the joint. Such an occurrence is easily repaired at this time by topping with new material.

Excess sealant should be dry-wiped from all surfaces while still uncured, following with a commercial solvent such as xylol, toluol, or methyl ethyl ketone. Should sealant accidentally begin to cure on adjacent porous surfaces, the excess sealant should be allowed to progress through *the initial cure or set-up.* It should be removed promptly by abrasion or other mechanical means.

CURED SEALANT IS USUALLY VERY DIFFICULT TO REMOVE WITHOUT ALTERING OR DAMAGING THE SURFACE TO WHICH THE SEALANT HAS BEEN MISAPPLIED.

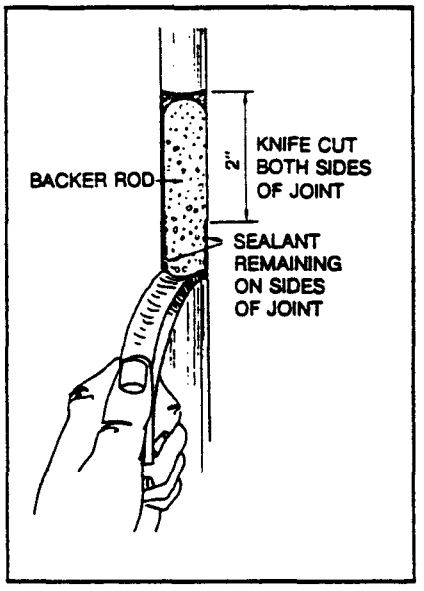
Field Adhesion Test:

A hand pull test may be run on the job site after the sealant is fully cured. (Usually within 7 to 21 days)

The hand pull test procedure is as follows:

1. Make a knife cut horizontally from one side of the joint to the other.
2. Make two vertical cuts approximately two inches long, at the sides of the joint, meeting the horizontal cut at the top of the two inch cuts.
3. Grasp the two inch piece of sealant firmly between the fingers and pull down at a 90° angle or more, and try to pull the uncut sealant out of the joint.
4. If adhesion is proper, the sealant should tear cohesively in itself or be difficult to adhesively remove from the surface.
5. Sealant may be replaced by applying more sealant in the same manner it was originally installed. Care should be taken to assure that the new sealant is in contact with the original, and that the original sealant surfaces are clean, so that good bond between the new and old sealant will be obtained.

FIELD ADHESION TEST



Precaution:

On contact, uncured sealant causes irritation. Avoid contact with eyes and skin. Contact lens wearers take appropriate precautions. IN CASE OF CONTACT, FLUSH EYES WITH WATER. CALL A PHYSICIAN. Remove from skin with dry cloth or paper towel. KEEP OUT OF REACH OF CHILDREN. Chem-Calk® 500 or 550 is manufactured for industrial use only.

6. AVAILABILITY AND COST

Chem-Calk® 500 or 550 polyurethane sealant is available throughout the United States through distributors. For the name of your nearest distributor contact Bostik at 800-523-6530 (in PA, 215-674-5600).

Shelf Life:

When stored at or below 80°F (27°C), Chem-Calk® 500 or 550 polyurethane weatherproofing sealant has a shelf life of twelve months from date of shipment from Bostik's warehouse facilities.

7. WARRANTY

Limited Warranty:

Your purchase and use of this product is subject to Bostik's standard terms and conditions of sale. Bostik's sole liability in the event of a product defect is to replace this product or return its purchase price. Under no circumstances will Bostik be liable for consequential or incidental damages of any type.

ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS OF PURPOSE ARE EXPRESSLY DISCLAIMED.

8. MAINTENANCE

No maintenance should be needed. If sealant becomes damaged, replace damaged portion. Clean surfaces in damaged area, and repair with fresh Chem-Calk® 500 or 550 sealant.

TECHNICAL SERVICES

Complete technical information and literature is available from Bostik. Any technical advice furnished by the Company or any representative of the Company concerning any use or application of any sealant is believed to be reliable, but the Company makes no warranty, express or implied, of any use or application for which such advice is furnished.

Pretested Adhesion to Substrates (PATS) Program

The program is intended to eliminate potential field problems by pretesting Bostik's construction sealants with samples of building materials on which the sealant will be applied. The tests will aid in determining the proper surface preparation method, effective solvents for cleaning and whether priming is necessary to achieve optimum adhesion. Following this procedure will remove many of the unknown variables that affect field success.

Test samples or coupons should be identified as to manufacturer, origin, designed use, building project, person and firm originating the request. Appropriate sketches or drawings showing the intended use can be helpful.

Materials submitted for testing should be sent:

Att: Technical Service Manager
Bostik Construction Products Division
P.O. Box 8
County Line and New Roads
Huntingdon Valley, PA 19006

10. FILING SYSTEMS

SPEC-DATA® II

Sweets Catalogs Section 7.11

Complete technical literature is available on request. Contact Bostik for specific bulletins.

DESCO PRODUCTS OF CONN., INC.
P. O. BOX 522
WEST HAVEN, CONN. 06516
TEL (203) 932-2271

Bostik
CONSTRUCTION PRODUCTS DIVISION

EMHART

11-86-1389A

ATTACHMENT B

CeilGard
Corrosion Coatings

Technical Bulletin
CG-675
May, 1987
Supersedes April, 1985

CeilGard Flakeprime® 675 (Formerly CeilGard 675) Catalyzed Epoxy Primer

Product Description	Most advanced of epoxy primers, CeilGard Flakeprime 675 is a two component product which combines the layering of micro-thin flake pigments with a unique resin/cure process. Thus it not only provides exceptional resistance to rust, chemical corrosion and resistance to undercutting, but also has the ability to cure at low temperatures and over damp surfaces. CeilGard Flakeprime 675 utilizes an advanced rust inhibiting system which does not rely solely upon the gradual deterioration of soluble pigments to prevent rust formation. Under highly corrosive conditions the primer retains its inhibitive properties much longer, resulting in improved corrosion resistance and longer service life.
Recommended Uses	Prime coat on steel or concrete surfaces. Although generally recommended for sandblasted surfaces, CeilGard's exceptional moisture tolerance permits its use over waterblasted or wet sandblasted surfaces. (Consult CeilGard technical representative.)
Use in Conjunction With	Prime coat for CeilGard Flakeprime 600 Epoxy Topcoat, optional prime coat for CeilGard Flaketar 661 Coal Tar Epoxy.
Generic Type	Catalyzed, rust inhibitive epoxy primer.
Surface	Applied over properly prepared masonry and steel substrates.
Resistance	Highly resistant to alkalies or solvents, equivalent to the best amine or polyamide primers. Superior to other epoxies in resistance to inorganic acids in water, and can be considered equivalent to vinyls in acid fumes, spillage, or water immersion environments. It is equivalent to amine cured epoxies in resistance to organic acids.
Color	Red and Gray.
Weight per gallon	10.7 ± 0.2 lbs. (mixed).
Solids Content	73% by volume, 82% by weight.
Viscosity	300 ± 50 cps @ 77° F.
Flash Point	Component "A" - 65° F. (18° C.). Component "B" - 130° F. (54° C.) (Pensky-Martens Closed Cup).
Shelf Life	Six months at temperatures below 90° F.
Pot Life	@25° F. - 12 hrs.; @50° F. - 8 hrs.; @70° F. - 3 hrs.; @90° F. - 2 hrs.
Temperature Resistance	350° F. continuous dry; wet varies depending upon topcoat.
Surface Preparation	*Steel* — For immersion or direct spillage use a "White Metal" sandblast in accordance with Steel Structures Painting Council Specification SP-5-63 or NACE Specification #1. For non-immersion a "Commercial" sandblast in accordance with SP-6-63 or NACE #3 is acceptable if cleaning is maintained in strict accordance with these specifications. Profile depth should be 1.0 - 2.0 mils. Can be applied over hand cleaned surface but reduced performance will result. *Concrete* — Sandblast to provide a clean, sound dry surface or acid etch with a solution of 1 part hydrochloric acid to 2-3 parts of water solution. Flush with water and allow to dry thoroughly. Concrete must be thoroughly cured (minimum 14 days) before preparing surface. All laitance, dust, curing or release agents must be removed during surface preparation.

The Ceilcote Company, Inc., CeilGard Corrosion Coatings
P.O. Box 40529 / Houston, TX 77240 / 7100 Wright Road / Houston, TX 77041 713-466-6701
140 Sheldon Road / Berea, OH 44017 216-243-0700
7065 Fir Tree Drive / Mississauga, Ontario / Canada L5S 1G7 / 416-671-1790

CEILCOTE

Application

Suitable for spray application at temperatures below 20° F. and will cure properly at temperatures as low as 10° F. *Precautions: Maintain adequate ventilation and avoid application over frosted surfaces or ice.*

CeilGard Flakeprime 675 will bond to damp concrete surfaces after acid etching or to concrete containing residual moisture as long as the surface is not visibly wet or hydrostatic pressure is not present. On moist surfaces apply with brush or roller to insure optimum adhesion.

Number of Coats and Thickness

One coat at 2.0 - 3.0 dry mils. *Three wet mils will yield 2.5 dry mils.*

Coverage

Theoretical coverage is 1171 sq. ft./gal. @ 1 mil DFT. Concrete surfaces will average about 250 sq. ft./gal. depending upon surface texture and actual film thickness.

Thinning

If needed, add up to 2 oz. per gal. of Solvent T-470 at temperatures between 20-70° F. Use up to 2 oz. per gal. of Solvent T-460 at temperatures above 70° F.

Recoat & Curing Time

	To Recoat	Cure Time
@25° F.	12-18 hrs.	96 hrs.
@50° F.	6-8 hrs.	36 hrs.
@70° F.	3 hrs.	12 hrs.
@90° F.	1 hr.	8 hrs.

For immersion service, topcoating should be done within 30 days. For atmospheric service topcoating should be done within 120 days.

Mixing

Mix Hardener Component "B" into Resin Component "A" using mechanical agitation to assure complete mixing. Material will become thinner when mixed. *Observe pot life limitations.*

Application Equipment

Brush or roller applications are particularly recommended for concrete — use a short nap roller, working material into surface, or use medium stiff natural bristle brush.

Conventional Spray — Use ⅜ I.D. fluid hose of 75 ft. maximum length. Use Binks #66 fluid tip and needle, 63 PJ or 63 PB air caps, or equivalents from other manufacturers.

Airless Spray — Use a minimum of 23:1 ratio pump and 60-100 mesh filter. Use tungsten carbide fluid orifice sizes of .015 - .023, with 25-70° angles.

Clean-Up

Use CeilGard T-410 Solvent, methyl ethyl ketone or lacquer thinner.

Packaging

Available in 1 gal. and 5 gal. units.

Storage

Store in a cool, dry place away from fire hazards.

Safety

CeilGard Flakeprime 675 contains epoxy resins, polyamide catalyst and aromatic solvent. The product's components have been formulated to optimize physical characteristics such as abrasion, moisture and chemical resistance while minimizing hazardous physical and health factors encountered during application. A concerned effort is made to be aware of the latest chemical toxicological information and to apply this knowledge in a responsible manner to insure product safety.

During application of CeilGard Flakeprime 675 materials always wear gloves and appropriate work clothing to minimize contact. Ventilation is required with special consideration for enclosed or confined area. Air movement must be designed to insure turnover at all locations in work area and adjacent areas to avoid buildup of heavy vapors. Use caution when handling flammable liquids, eliminate sources of ignition from work area, and containers with residues.

Observe safe storage practices by separating resins from hardeners, by keeping solvents in a cool area free of sources of ignitions.

Product Material Safety Data Sheets and Installation Bulletins are available and should be consulted when handling products. These products are for industrial and professional use only; application directions must be followed.

ATTACHMENT C

CeilGard
Corrosion Coatings

Technical Bulletin
G-630
May, 1987

CeilGard 630 Series
Epoxy-Phenolic Lining

Product Description	Two component Epoxy-Phenolic lining system designed for severe chemical exposures and tank lining service.
Recommended Uses	Superior tank lining systems suitable for petroleum products, chemicals, water, caustic and solvent service.
Use in Conjunction With	Self-priming two coat system.
Generic Type	Cross linked, flake filled, Epoxy-Phenolic.
Surface	Apply to clean, abrasive blasted surfaces.
Resistance	Resistant to petroleum/petrochemical products, chemicals, fresh and salt water.
Color	Green, Light Gray and off-white colors only.
Solid Content	62% + 2% by volume.
V.O.C.	2.7 lbs./gallon mixed.
Flash Point	61° F. (16° C.) mixed, Tag Closed Cup.
Shelf Life	18 months at 70° F.
Pot Life	3-4 hours at @ 77° F., 1 hour @ 95° F.
Temperature Resistance	170° F. (77° C.) immersion, 300° F. (149° C.) atmospheric.
Surface Preparation	*Steel:* Immersion and other severe service: white metal SSPC-SP-5 or NACE #1 with a 2.0 mil surface profile. *Concrete:* Lightly blast or acid etch the surface. If acid etched, the surface must be rinsed with fresh water and allowed to dry thoroughly.
Application	Spray preferred. Can be brushed on small areas.
Number of Coats and Thickness	Apply 10-12 wet mils (6-7 dry) in one multi-pass spray coat. Apply two coats of contrasting colors for a total DFT of 12-15 mils.
Coverage, Theoretical	960 sq. feet/gallon @ 1 mil, 160 sq. ft. @ 6 mil. DFT.
Thinning	As required, use CeilGard T-8305 Thinner.

Recoat & Curing Time

Metal Temp.	Recoat Times Min.	Recoat Times Max.	Cure Times
55-70° F.	24 hr.	72 hr.	5-6 days
71-95° F.	8 hr.	48 hr.	3-4 days
96-120° F.	6 hr.	30 hr.	1½ days

Note: Force curing at 120-180° F. for 48-72 hours will increase resistance to certain exposures.

Mixing	Mix part A with mechanical agitation and add part B catalyst while mixing. OBSERVE pot life limitations. For less than full units, mix A and B at 24:1 by volume.

The Ceilcote Company, CeilGard Corrosion Coatings
P.O. Box 40529 / Houston, TX 77240 / 7100 Wright Road / Houston, TX 77041 713-466-6701
140 Sheldon Road / Berea, OH 44017 216-243-0700

CEILCOTE

Application Equipment

All spray equipment should be clean and dry.

Airless: Pump ratio (min.)	30:1
Atomization pressure	2600-3000 psi
Tip size	.019-.027

Conventional: Standard production type spray guns.

Material hose I.D.	½ in.
Material hose length	(max.) 50 ft.
Air hose I.D.	5/16 in.
Atomization pressure	70-100 psi
Fluid tip (in.)	.086

Clean-Up

Use CeilGard T-410 or methyl ethyl ketone.

Packaging

Available in 1 and 5 gallon units.

Storage

Store in a cool, dry place away from fire hazards.

Safety

CeilGard Epoxy-Phenolic coatings contain epoxy and phenolic resins and alkaline curing agents, solvents and pigments.

During application of these products always wear gloves and appropriate work clothing to minimize contact. Ventilation is required with special consideration for enclosed or confined areas. Approved respirator may be required if "TLV's" are exceeded. Air movement must be designed to insure turnover at all locations in work area and adjacent areas to avoid build-up of heavy vapors. Use caution when handling flammable liquids, eliminate all sources of ignition from work area.

Avoid prolonged contact with skin and breathing of vapor or spray mist.

Product Material Safety Material Data Sheets are available and should be consulted when handling products. These products are for industrial and professional use only and application directions must be followed.

Designation	Title	Content
D-4	Conceptual Design Report For Planned Waste Storage Facility	54 Page Report with 7 Drawings

CONCEPTUAL DESIGN REPORT

WASTE STORAGE FACILITY

PRATT & WHITNEY

EAST HARTFORD, CT 06108

JANUARY 14, 1991

Prepared By:

LOUREIRO ENGINEERING ASSOCIATES

Comm. No. 971-10

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I INTRODUCTION

This report covers the conceptual planning of a Waste Storage Facility (WSF) for concentrated industrial wastes, selected dilute industrial wastes, and PCB-bearing wastes. The proposed WSF would replace existing storage facilities at the concentrated Waste Treatment Plant (CWTP) and at the Klondike area except CWTP-5 and CWTP-6.

The major functions of the existing CWTP include storage and treatment of concentrated industrial wastes as well as the handling of some dilute industrial wastes; the latter are also treated occasionally at the CWTP.

The principal treatment functions at the existing CWTP are:

- Neutralization of concentrated acids and alkalis
- Conversion of hexavalent chromium to trivalent chromium in concentrated wastes (and in dilute wastes delivered from satellite plants)
- Separation of oils from waste soluble oils

These treatments are conducted in the original (1950) CWTP which has been modified on several occasions. Treated wastes are discharged to the dilute wastewater systems; separated oils are placed in storage for off-site disposal.

Changes to the treatment system are not planned under the proposed WSF project. However interconnecting piping and interlocking controls would be necessary because:

- Some of the wastes to be stored in the proposed WSF would be pumped to the existing treatment facilities
- Separated oils would be pumped to the proposed WSF

Master planning includes a future project to construct new treatment facilities to the east of the proposed WSF. Therefore, the proposed WSF would be planned with the required interfaces with the existing as well as the planned future treatment facilities; this would include piping, controls and communications.

II SCOPE OF PROPOSED WORK

A. DEFINITION OF REQUIREMENTS

The basic functional requirements of the proposed WSF were defined by Pratt & Whitney personnel who would be responsible for operation of the system. These requirements were documented and discussed at several meetings attended by Pratt & Whitney operations, design and management personnel.

These meetings covered the major aspects of design, construction and operation of the required facilities. Some of the original basic functional requirements were modified during the planning process, which included study of several floor plans and various options for all major systems. These studies, reviews and meetings led to development of the following basic requirements for the facility:

- Provide for storage of concentrated industrial wastes and PCB-bearing wastes in compliance with all regulations.
- Provide for handling wastes from the East Hartford facility and from satellite facilities.
- Provide for shipment of wastes off-site through vendors, and/or treatment of wastes at the existing CWTP, as appropriate.
- Provide 21 storage tanks of 6000 gallon capacity each, arranged in five compatibility groups:
    - Acid/chrome
    - Alkali/cyanide
    - Oil/water
    - Ignitable
    - PCB

- Provide space for storage for containers arranged in 9 compatibility groups:

	Number of 55-gal steel drums		Number of 20-gal fiber drums
- Acids	96		
- Alkali compatible	96		
- Acid oxidizers/chrome	8		
- Oxidizers	8		
- Ignitables	120	or	350
- Organics	120	or	350
- Cyanide Metal and Salts	96		
- Miscellaneous	80		
- PCB	80		

- Provide space for storage and preparation of lab packs.
- Provide space for staging of transporters, and for transfer of liquids from transporters and drums to storage tanks and to treatment tanks.
- Provide four truck pads for box trailer movement of containers and for tanker truck deliveries and shipments of liquid wastes.
- Provide necessary pumps, piping, controls and instrumentation to accomplish the required functions.
- Provide necessary building and support systems.
- Locate the facility south of the existing CWTP and barrel building and west of the circular water tank.
- Provide staging areas for incoming deliveries of containers and for outgoing shipments, the total staging areas to be sized for placement of 800 20-gallon fiber drums.

B. GENERAL DESCRIPTION

It is proposed to construct a new WSF south of the existing CWTP, east of the circular water tank and adjacent to the north side of Willow Street. This location requires the demolition of the existing Casablanca Building. The building would be approximately 300 feet long and 167 feet wide. It would be constructed of concrete block walls with flat roof and structural steel framing. Truck access would be from the south side adjacent to Willow Street. To facilitate truck access demolition of the existing Oil House structure would also be necessary. Fork lift truck access would be via an entrance from Willow Street. A second fork lift access would be provided in the north wall for a future exterior ramp to the existing barrel building and to grounds of the existing CWTP.

All necessary utilities are available near the proposed site.

Under the State Building Code the building would be classified under Use Group H, High Hazard Uses because of the storage of combustible and corrosive liquids. Based on the building configuration (300'x167') the building would have two fire walls subdividing the building into three major segments.

- The east end (128'x167'):
  - Storage tanks and truck pads for acid/chrome and oil/water groups.
  - Container storage, staging and unloading stations.
  - Control room, toilet rooms, mechanical and electrical services.
- The center area (68'x167'):
  - Storage tanks and truck pad for alkali/cyanide group.
  - Container storage, staging and unloading station.
- The west end (96'x167'):
  - Storage tanks and truck pad for ignitable and PCB groups.
  - Container storage, staging and unloading stations.

Windows would be provided only in the control room, but skylights would be installed for natural lighting in other areas. The truck pad areas would be heated to 50°F and would be well-ventilated to handle truck exhaust and fumes. The design is based on truck engines being shut-down after the truck is maneuvered into position. Other work areas would be heated to 65°F with a lesser degree of ventilation. The control room would be heated and air conditioned.

The truck pads would be at grade elevation with a slight ramp down into the building to provide spill containment for the contents of a full tank truck. The north half of the building would be at an elevation four feet higher than the truck pads to provide appropriate dock height for loading/unloading box trailers. The 21 storage tanks would be subdivided into five compatibility groups, each adjacent to a truck pad to facilitate transfers to and from the tanks and tanker trucks. Each tank would be in a separate concrete containment; pumps and piping related to each tank would also be located in the containment. Each pump would have the capability to pump from the following:

- A tanker truck
- A transporter or a drum
- The tank within that containment

Each pump would have the capability to pump to the following as appropriate:

- A tanker truck
- A treatment tank or other system at the existing CWTP
- The tank within that containment

- Another storage tank within a compatibility group
- Selected tanks, as appropriate, in other compatibility groups.

Wastes would also be received at the facility in containers (drums or transporters). Deliveries from the East Hartford facility would be by fork lift truck; deliveries from the satellite facilities would be by box trailers unloaded by fork lift truck. Drums would be placed in designated segregated compatible storage containment areas on pallets, or they would be first placed in a staging area. Transporters would be placed at an unloading station for pumped transfer to storage or treatment tanks, or if necessary, would be first placed in a staging area.

Containers would be stored in segregated compartments based on compatibility groupings. Each compartment would be curbed and the floor pitched from front to rear to provide containment for at least 10 percent of the total volume of storage therein. The floor plan in the appendix provides for a 10-foot width allowance for each row of containers on pallets. This width could vary in the final design depending on pallet widths.

Transporter unloading stations would be arranged for placement of one or two transporters on a stand located near each group of tanks. Hose couplings would be provided on suction lines to the pump(s) for each tank in that group. The stations would be curbed and a sump provided for removal of liquids. Each stand would be capable of handling existing transporters as well as new transporters.

Wastes would be removed from the facility by one of the following three means:

- Containers by a vendor's box trailer.
- Pumping contents of storage tanks to the CWTP for handling in existing systems.
- Pumping contents of storage tanks to a vendor's tanker truck.

The proposed WSF would not provide for treatment of any wastes. Drawings in the Appendix show information such as site location, utilities, floor plan, building elevations and process schematics.

C. LOCATION OF WSF

The proposed location of the WSF is shown on the Site Plan. The location shown provides for the following:

- Proximity to the existing CWTP, to and from which overhead piping would be required.
- Proximity to the existing dilute wastewater treatment and pumping facilities at Willow Street and in Building E to which certain wastes must be pumped.
- Access from Willow Street for box trailers and tanker trucks.
- Continuous access (during and after construction) to the existing CWTP, including the existing barrel building.

The proposed WSF location would require:

- Relocation of existing operations in the Casablanca Building and subsequent demolition of it.
- Demolition of the existing Oil House
- Permanent loss of more than 100 parking spaces west of the Casablanca Building.

D. SITE WORK

1. Demolition of Casablanca Building

The Casablanca Building and the scale east of the building would have to be removed to provide space for the proposed WSF. An application has been filed with the Town of East Hartford for building demolition. Due to the age of the structure, a review by the Historical Commission was necessary; a public comment period on the application expired in January 1991.

Planning is now underway for transfer of existing operations to new locations. These transfers would be critical to the scheduling of construction of the proposed WSF because this work could not begin until demolition of the Casablanca Building is accomplished.

The preparation of scope of work, schedules and cost estimates are included in this report, but were prepared by others for the Casablanca Building demolition or operations transfers.

2. Demolition of Oil House and Oil Yard Shed

The existing Oil House will be demolished to provide truck maneuvering space for access to the proposed WSF. The Oil House will not be needed for its present functions when the new oil handling facilities near the South Tank Farm are ready for operation. It is projected that operations in the existing Oil House will cease about July 1991, so that demolition could then proceed.

These operations transfers and demolition are not critical to the construction schedule of the proposed WSF; however,building demolition and site restoration should be completed at the same time as the proposed WSF.

The existing shed at the Oil Yard south of Willow Street would have to be removed to allow construction of a new truck scale. This could be scheduled at the same time as the Oil House demolition.

The preparation of scope of work, schedules and cost estimates are included in this report, but were prepared by others for the Oil House and Oil Yard Shed demolition or operations transfers; the latter is included as an additive alternate.

3. Other Removals/Relocations

Existing fencing north and west of the Casablanca would require removal and certain sections of fencing would require relocation to maintain security of the perimeter fencing. The existing sliding gate near the northeast corner of the proposed WSF would require removal and relocation to a position east of the southeast corner of the proposed WSF. At that location pedestrian and truck traffic would be controlled to both the existing CWTP and to the proposed WSF.

All existing pipe lines and utilities below or within 10 feet of the foundations and slabs of the proposed WSF would be removed, or if necessary, would be relocated. It is proposed that this work be carried out separately from the Casablanca Building demolition contract for the following reasons:

- More time would be available for planning the scope of the work.
- Removal of contaminated soils and debris could be minimized in or eliminated from the Casablanca Building demolition contract.

The following work must be done before demolition of the Casablanca Building:

- Sanitary sewer along south side of Casablanca Building must be relocated and kept in continuous service since it also serves the CWTP and the Maintenance Building.

The following work must be done before demolition of the Casablanca Building, but cannot be done until activation of the new buried piping between Building E and the CWTP:

- Deactivation of steam, condensate and air lines serving the Casablanca Building from the vicinity of the Oil House.
- Removal of at least the east-west run of pipe trench (and piping and utilities contained therein) between the southeast corner of the Casablanca Building and the CWTP.

The following removals can be done prior to or concurrently with the Casablanca Building demolition:

- Deactivation/removal of the sanitary sewer serving Casablanca Building.
- Deactivation/removal of the 8-inch water service and PIV CAS-7 serving the Casablanca Building.
- Removal of at least 30 feet of each of three waste lines south from the southeast corner of the Casablanca Building.

The following removals should be done after demolition of the Casablanca Building and before construction of the proposed WSF:

- Existing drains, manholes, catch basins, etc. located below or within 10 feet of the proposed WSF.

The preparation of scope of work, schedules and cost estimates are included in this report for these miscellaneous removals/relocations, except for fencing for which cost estimates were prepared by others.

4. Handling and Disposal of Excavated Soils and Contaminated Debris

The preparation of scope of work, schedules and costs estimates are included in this report, but were prepared by others for the handling and disposal of excavated soils.

5. Excavation and Backfill

Excavations would be required for various removals and relocations as well as for new foundations and floor slabs. Excavations within the area now occupied by the Casablanca Building would be minimal, consisting chiefly of excavations to insure good foundations for new building columns. Perimeter wall footings would require excavations down to elevations below frost level and four feet wide at the bottom; larger excavations would be required at each column. Excavations for pipeline and utility removals would be the minimum required for the removal of the piping or structure. The cost of excavation carried in this report includes removal of the earth and placement of it in hazardous wastes transporters provided by a vendor at the site (see discussion in sub-section II D4). It is assumed excavation work would require use of personnel protective equipment and monitoring as well as precautions to prevent spread of potentially contaminated soils (use of exclusion zones, equipment decontamination, etc). On-site storage, off-site transportation and disposal costs are not included.

6. Truck Scale

A new truck scale would be provided east of the proposed WSF and south of Willow Street. This would provide a convenient point for weighing all trucks entering or leaving the WSF via Guard Post No. 8. The scale would provide for local readouts as well as remote signals to the control room of the WSF. Two way communications would be provided between the scale and the WSF control

room. The scale would have a capacity of 100 tons. Costs are included as an additive alternate in this report; demolition of the Oil Yard Shed required to allow scale construction was estimated by others.

7. Pipe Rack

A pipe rack would be required between the proposed WSF and the existing CWTP. This rack would support nine pipe lines and required electrical, control, security and communications wiring conduits. This rack would be constructed of structural steel with concrete piers. It would be located where shown on the site plan and would be designed for truck clearance below any piping or structural members, and for truck maneuvering between piers.

8. Fencing

The preparation of scope of work, schedules and cost estimates are included in this report, but were prepared by others for new fencing, relocation or removal of fencing or temporary fencing. The latter may require changes during the course of construction to maximize use of other facilities and parking areas.

9. Surface Finish and Pavement

Finished surfaces would be paved with bituminous concrete all around the proposed WSF. This would include suitable repaving for truck access from Willow Street, and to prevent surface runoff from entering the WSF. The areas east and west of the proposed WSF would be repaved. The area north of the proposed WSF would be paved to maintain access to all existing facilities at the CWTP. This would include areas not presently paved, although an effort would be made to preserve as many existing trees and shrubs as possible. All pavement would be two courses of 2-inch thick bituminous concrete with a 12-inch base of processed aggregrate.

10. Utilities

Utilities and services required for the WSF would be as follows:

- Potable water supply
- Non-potable water supply
- Steam and condensate
- Fire water supply
- Compressed air
- Electrical power wiring
- Controls and communication wiring
- Security and alarm wiring
- Sanitary wastewater
- Storm water

Most of the required services are available near the site of the proposed WSF. The underground piping now under construction between the CWTP and Building E includes valved stubs for the following located about 25-feet east of the proposed WSF:

- Potable water supply
- non-potable water supply
- fire water supply
- compressed air

This package of new piping also includes:

- Steam and condensate lines which would be tapped into for service.
- Two electrical conduits to facilitate new power wiring from two separate sources.

The water, air, steam, condensate, and electrical power lines would enter the east end of the proposed WSF. In addition, a second fire main service would enter the building from a larger existing fire main on Willow Street near the southwest corner of the proposed WSF. Wiring for controls, communications, security, and alarm purposes would be in overhead conduits on the pipe rack to the existing CWTP for interconnection with existing systems there, and also (by use of the new conduits being installed with the underground piping) with existing systems in Building E.

No wastewater discharge connections would be provided from the proposed WSF except for the following:

- Sanitary wastewater (from toilet rooms only)
- Storm water
- Process wastes as described in Section IIH.

Sanitary wastewater would be run through buried drains from the toilet rooms on the east end of the proposed WSF to a manhole on the relocated sanitary sewer (see Sub-Section II D3).

Storm water from the site would be discharged to Willow Brook Pond through a new storm drain constructed around the north, west, and south sides of the proposed WSF with discharge into an existing 30-inch storm drain in Willow Street (discharges into existing 48-inch drain to Willow Brook Pond).

The discharge into these systems would include roof drainage from the proposed WSF as well as surface runoff into new catch basins as required.

E. BUILDING CONSTRUCTION

1. General Description

A general description of the proposed WSF is presented in Section IIB. Plans of the main floor level and mezzanine levels, and exterior building elevations are included in the Appendix.

2. Foundations

Soil borings were obtained to determine the type of soil at the site and to estimate its bearing capacity. The locations of borings are shown on the Site Plan. Based on these borings a geotechnical feasibility study was prepared by Clarence Welti, P.E. This feasibility study identifies only one potential foundation problem. At boring No. MW-7 there is evidence of 10 feet of fill having lower bearing capacity than the other soils encountered; the study suggests that this soil be removed and replaced with well compacted selected material. The cost estimate reflects only a small allowance for removal of such undesirable soils because:

(1) Boring MW-7 is located west of the west end of the proposed WSF.

(2) Other borings, including B-12 only five feet away from MW-7, did not show the presence of similar soils.

For purposes of this conceptual plan and cost estimating a soil bearing value of 3000 pounds per square foot was used for column footings and 2000 for wall footings. Foundation design would incorporate Zone 2 seismic requirements. Typical foundations are shown on the drawings in the Appendix.

The selection of a foundation design included consideration of the need to minimize soil excavation because of the high cost of disposal of excavated

soil. Continuous wall foundations and footings were chosen because the alternative use of grade beams would result in transfer of all wall loads to the column footings where very large excavations would be necessary.

3. Structural System

The structural system would consist of 12x12 steel columns, 21-inch girders supporting 44-inch joists and 1 1/2 -inch metal roof deck. The columns (enclosed in concrete) would be spaced at 32 feet except for two bays at 34 feet each. The joists would span 82 feet between the outside column lines and a central column line. Structural design would incorporate Zone 2 seismic requirements. The drawings show typical structural framing. No provisions would be made for support of hoisting equipment from the roof structure.

4. Walls

The exterior walls would be 6-inch exterior split-face concrete block and a 10-inch concrete block backup with 1 1/2-inch isocyanate insulation in the air space. Interior walls would be 12-inch plain face concrete block with no insulation, except around air conditioned space such as the control room. The drawings show typical wall sections. All walls would be reinforced.

5. Roof

The roof would be coal tar pitch built-up roofing placed on coated metal deck. Rigid insulation would be provided. The roof would be pitched at one-quarter inch per foot toward roof drains located near the outside walls. The roof would have an 8-inch parapet all around. Projections through the roof would include:

- Roof drains
- Skylights
- Exhaust fans
- Tank vents
- Plumbing vents
- Access hatch

6. Doors and Windows

Electrically-operated rollup doors would be provided at the exterior walls for truck and fork lift entrances and at the truck docks. Rollup doors would also be provided where required on the interior walls including both fire walls. These doors would be 12 feet wide and 16 feet high. For security reasons the exterior doors would be opened from the control room only.

Personnel doors would be three feet wide, except double three-foot doors would be provided at selected locations such as one entrance to the control room and the entrance to the mechanical room. For security reasons only the entrances to the control room area and to selected doors on the east and north walls would be used for normal pedestrian entry; all other doors would be for emergency use only.

Windows would be provided for the control room only. Skylights would be provided for the container storage areas.

7. Walkways, Stairs, Handrails

Mezzanines and walkways would be constructed of structural steel with metal deck walking surfaces. Stairs would have non-skid fiberglass treads. Handrails would be two-inch steel piping, 42 inches high.

8. Floors and Containments

All floors would be designed to act as containment for leaks or spills. The floor design would incorporate the following:

- Minimum number of construction joints (requires extra reinforcing steel).
- Construction joints generally located at high points of pitched floors.

- Waterstops at all construction joints.
- Curbs cast integrally with slab where feasible.
- Floors pitched away from doors.

Special containment provisions would be made in areas subject to spill or leaks. These include:

- Storage tanks
- Truck pads
- Fork lift ramp
- Transporter unloading stations and staging areas
- Container storage areas

Each storage tank would be placed within a separate containment large enough to hold the contents of the tank. Containment walls and curbs would either be cast integrally with the slab or waterstops would be provided at the construction joint. Containment floors would be pitched toward small pump out sumps.

Each truck pad would be curbed and depressed sufficiently to hold the entire contents of a tanker truck. This would be accomplished by providing a sloped drop of nine inches from the entrance to a relatively flat area 40 feet long at the truck dock.

Containment for the fork lift ramp would be provided by curbing both sides and installing a sump at the bottom of the ramp. The sump volume would be about 500 gallons (larger than the capacity of the largest transporter to be moved by fork lift truck).

Containment for the transporter unloading stations would be by curbing to obtain a volume of at least 500 gallons. Transporter staging areas would not be curbed, but the floor would be pitched to a 500-gallon sump.

Containment for container storage areas would be achieved by curbing each area and depressing the area four inches from the entrance to the opposite end. This would provide a minimum containment volume of 10 percent of the volume of all containers placed therein when stacking no more than two high.

9. Truck and Fork Lift Access

Four truck pads would be provided for tanker truck loading/unloading and for box trailer loading/unloading. The cost estimate is based on this arrangement, with an add-on cost shown for providing a fifth truck pad.

As previously discussed, each truck pad would have a moderate pitch into the building with a 40-foot long level area at the truck dock so that box trailers and tanker trucks would be essentially level for loading and unloading. Truck pads would also be used to bring in portable lifting equipment for tank removal. The fork lift ramp would be designed to allow entrance of special lifting equipment into the container storage area if this should be needed.

The fork lift ramp would have a slope of three feet - three inches in 67 feet, or just under five percent.

10. Paints and Special Coatings

a. Coating Type

A polyester resin system would be used as a universal coating on all surfaces of the building slabs and all other surfaces up to six feet above the slab. The polyester resin would resist the effects of the general waste compatibility groups described in the Section II A. The coating systems proposed are not intended for immersion service; consequently removal of accumulations of liquids in sumps and appropriate

cleaning and removal of spills within reasonable time frames would be required to maintain continued effectiveness of the proposed coating systems.

b. Floors and Truck Bays

A trowel applied laminated floor coating system would be used for all floors. Before applying coatings, the new concrete floor would be cured a minimum of 28 days (no curing agents or sealers would be used). The surface would then be roughened and any holes or depression would be filled with a compatible grout.

Typical floor coating systems require application of a primer which is allowed to dry a minimum of 12 hours but less than 2 weeks. This would be followed by a trowel-applied (approx. 1/4") base coat to the entire floor, including proper sealing of all construction joints and penetrations. The top coat (approx. 10-20 mils) would then be applied within 7 days after base coat application. This application would act as a sealer and would contain a medium grit for skid and abrasion resistance.

Metal deck walkway and mezzanine surfaces would be coated with a similar material designed for use on steel.

c. Walls

All vertical surfaces up to six feet above the floor would be prepared by light sand blasting or water blasting followed by application of two coats of chemically resistant concrete sealer. Curing time between coats would be approximately 10 hours and full cure approximately 7 days.

Masonry surfaces more than six feet above the floor would be coated with an epoxy finish.

d. Tank Containments

These areas would receive the same types of applications as the floors and walls described above. Support piers and mounting bolts would be coated as an integral part of the containment coating system.

e. Steel Surfaces

Structural and other steel surfaces would be coated in a manner similar to that described for walls using similar materials designed for use on steel, except that the roof girders, joists and metal deck would receive an alkyd type coating.

f. Manufacturers

Several reputable manufactures offer the types of coatings proposed. They include:

1) Ceilcote
   140 Sheldon Road
   Berea, Ohio 44017
   (216) 243-0700

2) Wisconsin Protective Coating Corp.
   614 Elizabeth St.
   Green Bay, Wisconsin 54305

3) Master Builders, Inc.
   23700 Chagrin Blvd.
   Cleveland, Ohio 44122
   (216) 831-5500

4) Stonehord, Inc.

One Park Ave.

Maple Shade, N.J. 08052

(609) 779-7500

11. Miscellaneous Equipment

Dock bumpers and dock levelers would be provided at each box trailer dock. A 5000-pound capacity scale for weighing transporters and containers would be provided. One standard and one explosion-proof fork lift truck with 6000 pound capacity are included in the cost estimate as an additive alternate. No hoisting equipment is included.

12. Control Room

The control room would house desks, files, computer equipment, control center for all instrumentation, alarms, security, communications and other supervisory functions. It would be on two levels, permitting closed circuit television observation of conditions at all six truck pad, storage tank, and container storage areas from the control room.

The control room areas would be air conditioned and would have finished ceilings, walls, and floors.

13. Utility Areas

An electrical room would be located above the toilet rooms. On the main floor level at the east wall, a mechanical room would be provided for incoming services (water, air, steam, condensate, fire, electrical). This would provide an area for water meters, pressure regulators, fire valves, hot water heater, and other facilities as needed.

A section in the southwest corner would be reserved for a second fire main service and foam system.

14. Plumbing

Two toilet rooms would be provided, one for men and one for women. Sanitary drains would be piped out the east end of the building to the relocated sanitary sewer in Willow Street.

Potable water would be metered in the mechanical room where a backflow preventor would be provided. Cold water would be piped to the following:

- Two toilet rooms
- Drinking fountains (located only at the east end of the building for access to sanitary drain).
- Emergency showers and eyewashes located at several points throughout the facility.

A hot water heater would be provided in the mechanical room. Hot water would be piped to the toilet rooms.

Roof drains would be piped overhead to the north and south walls and leaders would be piped inside the building to new drains leading to the storm drainage system (see sub-section II D10).

Other piping such as for compressed air and non-potable water is covered in other sections of Part II.

15. Fire Protection

The entire facility would be sprinklered. The system would be designed for 0.3 gallon per minute per square foot over 3000 square feet in all areas, using water with AFFF foam in the west end of the building where ignitables are handled, and using water only in the remainder of the building. The west end of the building would be supplied water from the existing 12-inch fire main in Willow Street through a riser in the fire protection room in the southwest corner of the building. The remainder of the building would be supplied from the 8-inch fire main and riser in the mechanical room at the east end of the building.

Other fire protection requirements for the ignitable handling areas (west end) include ventilation and electrical discussed elsewhere.

16. Heating, Ventilating and Air Conditioning

Heating of the WSF would be provided by steam for all areas. The 4-inch diameter, 30 psig underground steam line currently under construction to serve the CWTP, would be tapped into to provide steam for the WSF. The adjacent 2-inch condensate return line would also be used.

Winter heat and ventilation would be provided by air handlers equipped with intake fans and steam coils. Exhaust air ventilation would be provided by cabinet fans paired with each air handler. Air to air heat exchangers would be utilized to preheat incoming air with air being exhausted. This would result in a substantial recovery of energy which would otherwise be exhausted.

Ventilation within the tank storage and truck pad areas would provide approximately three air changes per hour during the heating season. This rate of ventilation would minimize the buildup of exhaust fumes as trucks enter and leave the facility. Also, it would dilute any fumes during transfer operations and would meet the fire safety requirement of 1.0 CFM air exhaust per square foot of floor area during any liquid transfer operation. This exhaust system would be linked with the pumps in the ignitable area to insure that the ventilation system is operating during and 20 minutes before and after running a pump. A vapor barrier wall would be provided between truck pad No. 4 and tank Nos. 16-19. The heating system would maintain a temperature of approximately 50°F in this area.

As discussed in Section IIF of this report, the storage tanks are provided with enclosed tops so that losses due to evaporation would be

eliminated. Ventilation during filling or emptying or due to temperature variations would be vented, however. The acid, alkali and chrome tanks would be provided with "passive" scrubbers on the vent lines to the tanks. No forced ventilation would be required but the air forced out of the tanks during filling or temperature increases would be scrubbed. Common scrubbers for all acid/chrome tanks and all alkali/cyanide tanks would be used. For oil-containing and ignitable wastes, normally closed flame arrestors with vacuum breakers would be provided on each tank vent to minimize evaporation losses.

The container storage area would be heated and ventilated in a similar fashion. Air handlers for intake air and steam heating would be provided. Exhaust ventilation also would be provided by cabinet fans. Air to air heat exchangers would be used to preheat intake air with the exhaust air. The area would be maintained at 65°F. The normal ventilation rate in this area would be less than in the tank storage and truck pad areas. Except during transporter unloading operations, no source of air contamination would exist to require ventilation rates higher than would be required for normal warehouse operations.

At each of the transporter unloading areas, local slotted, lateral exhaust hoods would be provided. Centrifugal exhaust fans would draw ventilation air though individual scrubbers to prevent discharge of any fumes generated to the atmosphere.

During summer months, additional ventilation would be provided to both the tank storage/truck pad areas and the container storage areas in order to provide a cooler, more comfortable work area. Power roof ventilators would be used to achieve approximately 12 air changes per hour. Intake air would be drawn through louvers on the north and south walls of the building.

All motorized fans and louvers installed within the tank storage/truck pad and container storage areas for ignitables would be equipped with explosion proof motors and controls.

The control room and other ancillary areas would be provided with steam unit heaters. Wall mounted air conditioning/ventilating units would be provided in these areas.

17. Electrical

Power service to new storage building would be 480 volt, 3 phase, 60 hertz and would be supplied from two (2) separate sources in the existing manufacturing building, one source to be designated "normal" and the other "emergency: or "stand-by". Each service would consist of 3-500 MCM cables and 1 No. 4/0 ground in 3" conduit. Underground portion of conduits from Building E to the WSF are under construction. Service from each source would be protected by at least a 400 amp. circuit breaker installed at source.

A 400 amp. circuit breaker would be installed in the electrical equipment room for terminating each service.

A 400 amp. automatic transfer switch would be provided to transfer power to the "emergency" or "stand-by" power source in the event "normal" power fails or is turned off for any reason. Re-transfer to "normal" source would be manually controlled.

480 volt power distribution within the WSF would be via a motor control center supplied by the above service. Motor control center would contain circuit breakers, motor magnetic starters, H-O-A selector switches, run indication lights, etc. as required.

A 75 KVA transformer, 480V-480Y/277 volt, with suitable distribution panelboard would be provided to supply the HID lighting load.

A 30 KVA transformer, 480V-208Y/120 volt, with suitable distribution panel board would be provided to supply other lighting loads, 120 volt receptacle loads, instrumentation and control power, etc.

All electrical equipment would be housed in Nema Type 12 enclosures except for explosion proof, Class I-Div. I or II, requiring Nema type 7 in the ignitables handling area up to eight feet above the floor.

General lighting would utilize single, pendant mounted 400W an 250W HID (metal halide) high/low bay lighting fixtures designed to provide a lighting level of 30FC maintained.

Lighting in control room ,toilets and hallways would utilize recessed troffer fluorescent lighting fixtures with parabolic lenses, designed to provide a lighting level of approximately 75 FC, maintained.

Supplemental incandescent lighting would be provided under catwalks and platforms as required.

Portable, or adjustable, flood lighting would be provided at each truck dock for lighting interior of box trailers during loading/unloading operations.

Minimal flood lighting would be provided on outside of building consisting of wall mounted HID fixtures with photo-control. It is assumed that existing parking lot and/or street lighting would provide adequate illumination for normal operations.

Lighted exit signs would be provided at all doors deemed to be exits.

Battery powered emergency lighting fixtures would be installed in strategic locations inside building to facilitate exit from the building in the event of a sustained power outage.

At least one fluorescent fixture in control rooms, toilets, etc. would be of the emergency type.

Certain overhead metal halide lighting fixtures would be equipped with auxiliary tungsten-halogen lamps to provide minimal lighting after a momentary power loss.

A No. 4/0 bare copper grounding loop would be installed around building approximate 1'-6" below grade. Ground rods, 5/8" copper clad, 10 feet long would be driven at corners and at midpoints of building. Ground loop would be bonded to structural steel on alternate columns and to ground buses in electrical equipment room and control rooms. Ground loop would be bonded to existing plant ground grid via No 4/0 grounding conductors run with the power service.

The truck pad in the explosion proof area would have a grounding reel installed for connecting to trucks when loading or unloading.

As a general rule each conduit run would include a grounding conductor.

F. STORAGE TANKS

1. General Description and List of Tanks.

Liquid wastes would be received from Pratt & Whitney facilities in various quantities including drums, transporters, and tanker trucks. After appropriate classification, they would be pumped to one of twenty-one 6000 gallon storage tanks designed to contain that specific waste. The waste would either be pumped to the existing CWTP, or upon accumulation of an economic quantity for disposal, to a tanker truck for disposal by a licensed hazardous waste vendor.

The vertical, enclosed, cylindrical storage tanks would have dished bottoms and domed tops and would be supported on legs. There would be two withdrawal connections, one at the lowest point of the dished bottom and one at the lowest point of the straight side wall. The domed top would have a 24-inch manway for access; a center flanged pipe for connection to the vent system; and three other flanged pipes for filling and instrumentation connections.

Each tank would be located within its own containment (14 ft x 22 ft - 8 inches x 3 ft deep x 7.48 = 7100 gallons), with a volume greater than the nominal tank volume of 6000 gallons. The operating valves, transfer pumps and other single walled equipment would be located within the containment. Tanks that are designed to contain similar, compatible wastes would be located adjacent to each other and have interconnecting piping.

The tanks and the type of solution intended to be stored are listed below:

GROUP	TANK #	DESCRIPTION	CONTENTS
Acid Compatible	1	Acid/Oxidizer	Acids (including Nitric)
	2	Acid Fluoride	Acids (including Hydrofluoric)
	3	Acid	Utility Tank, could be used for Acids, Dilute WW, Dilute Chrome
	4	Fixer	Fixer Solution
	5	Chrome	Chromic Acid
Oil/Water Compatible	6	Zyglo	Zyglo
	7	Water & Solvent	Water & Solvent
	8	High Flash	High Flash/Soluble Oil, Dilute Zyglo, Other
	9	High Flash	High Flash Oil
	10	Soluble Oil	Soluble Oil
Alkali Compatible	11	Alkali Treatable	Treatable Alkali
	12	Alkali Special Treat	DWW, Specially treated alkali, alkaline chromes other
	13	Alkali Vendor Disposal	PS 644, Ammoniated Alkali
	14	Cyanide	Cyanide
	15	Cyanide	Cyanide
Ignitable Compatible	16	B1 Oil	B1 Oil
	17	B2 Oil	B2 Oil
	18	B3 Oil	B3 Oil & Solvent
	19	Dilute Oily Waste	Dilute Oily Waste, Dilute Waste Water, Dilute Zyglo
PCB	20	PCB (TSCA)	TSCA regulated
	21	PCB	Not-regulated

2. Materials of Construction

The tank materials in each group would be compatible with all of the solutions to be stored in that group. This would provide back-up capacity in the event of the need to isolate the solution in a particular tank or because of temporary increases in quantities of certain types of wastes. Therefore the material selection reflects the most stringent requirements for solutions in each of the groups.

Tank #	Waste Type	Tank Construction
1,2,3,4,5	Acid	Hypalon lined steel or Kynar lined steel interior. Exterior steel coated with epoxy based paint.
6,7,8,9,10	Oily/water	Mild steel, interior coated with 10-12 mil epoxy-phenolic coating or fiberglass reinforced epoxy-phenolic composite. Exterior steel coated with epoxy based paint.
11,12,13,14,15	Alkali/cyanide	Mild steel. Exterior steel coated with epoxy based paint.
16,17,18,19	Ignitables	Mild steel, interior coated with 10-12 mil epoxy-phenolic coating or fiberglass reinforced epoxy-phenolic composite. Exterior steel coated with epoxy based paint.
20,21	PCB's	Mild steel. Exterior steel coated with epoxy based paint.

3. Pump Connections

Transfer pumps would be hard-piped to the inlet and outlet connections of

the tanks. The pipes would be connected by gasketed flange. The inlet pipe would extend through the dome top into the tank to introduce the liquid waste below the solution level.

4. Accessory Equipment

Normal venting of atmospheric tanks is required to compensate for the following conditions:

- Air intake during tank emptying
- Vapor exhaust which occurs during tank filling
- Expansion and contraction of the vapor space due to temperature fluctuations.
- Normal evaporation of the liquid
- Emergency situations, such as fires.

Venting under normal operating conditions can be achieved with open vents, pressure vacuum (PV) valves or relief valves. Open vents may be used with solutions that do not emit hazardous materials or VOC's (volatile organic compounds), or for tanks with capacities less than 2500 gallons. Pressure vacuum valves are designed for atmospheric storage tanks containing low-boiling liquids.

5. Vapor Emission Control

a. Acid Waste Storage Tanks

Several potential air contaminants are associated with this group of tanks, including chrome and nitrous oxides. API Standard 2000 (Venting Atmospheric and Low-Pressure Storage Tanks) specifies venting capacities for emptying, filling, and thermal breathing. For each 6000 gallon tank in this bank, 25 CFM is required. Since the

chemicals are compatible, the vents would be manifolded to a single discharge, which would connect to a single vapor control device.

The acid vapors would be removed from the exhaust air stream using a wet scrubber. The air volume is sufficiently low to allow the use of a passive wet scrubber. Since there is no forced air through the scrubber, the volume of air lost to the outside of the building will be minimal. Contaminated solution would be drained to one of the storage tanks in the group when required.

b. Alakline/Cyanide Waste Storage Tanks

The same design criteria would apply to these tanks as the acid storage tanks.

c. Oily/Water Storage Tanks

The primary concern for air contamination from these tanks is VOC's (volatile organic compounds). The venting capacity requirement is 25 CFM, maximum, which would be routed through a carbon adsorption unit.

6. Manufacturers

Steel and FRP tanks would be manufactured to ASI standards for closed atmospheric tanks. Several companies specialize in this type of construction, including:

1) Clawson Tank Company
   4701 White Lake Road
   Clarkston, Mich. 48016
   313-625-8700

2) Fiberglass Products, Inc.
   Devine St.
   North Haven, CT 06473
   203-281-6161

3) NAPCO, Inc.

Plymouth Industrial Park

Terryville, CT 06786

203-589-7800

4) New England Plastic Coated Products, Inc.

350 Old Colony Rd.

Norton, Mass. 02766

508-222-3019

5) Carolinch Co

47 Richard Rd.

Ivyland, PA 18974

215-674-0379

G. TRANSFER PUMPS

1. General Description and List of Pumps

Two pumps would be provided for storage tank Nos. 1,2,3,5,11 and 12; all other tanks would have one pump. These pumps (100 GPM) would serve to (1) transfer waste from a tanker truck into the storage tank; (2) transfer from the storage tank to a tanker; (3) pump to treatment, as required; (4) transfer waste from the transporter unloading station to the storage tank; or (5) recycle the waste within the storage tank for sampling.

The pumps would be of the double diaphragm air driven type. By variation of the air pressure, the flow rate would be adjusted. In addition, the diaphragm would provide a contained fluid space to minimize fugitive emissions, which would be a concern in meeting air emission standards.

The pump description is:

Pump Type	Flow Capacity	Pipe Size	Solids Handling
Double diaphragm air driven	0-115 GPM	2"	up to 1/4"

2. Materials of Construction

The pumps would be standardized throughout the facility to minimize stocking replacement parts. Therefore the materials of construction would provide corrosion resistance for the most aggressive condition.

The inner and outer wetted housing surfaces would be made of glass-filled polypropylene, the ball valve would be made of viton, the diaphragm made of viton/teflon, and the diaphragm rod and hardware of stainless steel.

3. Air and Power Supply

Air required to operate all of the pumps would be supplied from a common manifold connected to the main air supply to the building. Each group of tanks would be fed from a feeder line overhead.

Pump operation would require air solenoids to activate the air supply. These solenoids would be electrically operated and be fed from an overhead power supply.

4. Air Exhaust

Diaphragm pumps require an oiled air source to operate effectively. When this air is exhausted during the pump cycle, it generates some noise and an oil residue. All of the pump exhausts in a group would be connected to a common manifold to be directed overhead to a muffler and oil removal station.

5. Accessory Equipment

A surge suppressor for each group of pumps would be installed to minimize the air "hammer". A strainer would be provided on the suction line to each pump.

6. Manufacturers

Several new manufacturers of air operated double diaphragm pumps have entered the market in the past two or three years. The two companies with the longest manufacturing history are:

1) Warren Rupp, Inc. ("Sandpiper")

P.O. Box 1568

Mansfield, Ohio 44901

414-524-8388

2) Wilden Pump & Engineering Co.

22069 Van Buren St.

Colton, Cal. 92324

714-783-0621

A new competitor supplying this type of pump is:

Aro Corp.

1 Aro Center

Bryan, OH

419-636-4242

H. TRANSFER PIPING

1. General Description

Transfer of waste solutions between storage tanks, tanker trucks, the transporter stations and the existing CWTP would be through solid fixed pipelines except at connection points where flexible sections are required. Within the WSF transfer will be made in dedicated lines between source and destination; when solutions are transferred to the CWTP, compatible solutions would flow in a common pipe. All transfer piping would be double-walled for containment.

Diaphragm valves would be used for the control of flow and destination. This type of valve is preferred to minimize potential fugitive emissions. They can be operated in both a manual and automated mode.

2. Materials of Construction

PVC or polypropylene pipe would be used as a waste carrier in the alkali chemical areas.

Polypropylene has good fusion weldability at all the fitting connections and would minimize leakage; PVC would be solvent welded.

PVDF (polyvinylidene fluoride) would be the universal waste carrier in the acid and oily/solvent chemical areas. This material can also be fusion welded to provide leak-proof fitting connections.

3. Piping to and from Existing CWTP

Transfer piping from the storage tanks to the CWTP would be routed within the WSF at an elevated position to the northeast corner of the building. It would exit the building through the side wall at a minimum height of

15 feet above grade. Pipes would be carried overhead on rack supports to the southwest corner of the existing CWTP. Refer to Schematic I, Sheet 4. The pipes would be carried in a double-walled containment and be insulated and electrically heat traced. The pipes would be pitched to drain the contents back into the storage tanks or, where necessary to treatment tanks.

4. Piping to and from Tanker Trucks

Fixed pipe from the storage tanks would terminate at the containment wall adjacent to the truck bays. The termination would be a "camlock" fitting with an integral manual ball valve to minimize dripping. Flexible hose lengths would be stored on a wall rack to connect the fixed pipe to the tanker truck. Refer to Schematic II, Sheet 5.

5. Air Supply and Oil Removal

Air would be supplied from the new feed lines being installed between Building E and the CWTP. The line would enter the east side of the WSF. Since a major portion of the air would be used for the air driven diaphragm pumps which require oiled air, no oil removal would be provided on the main air supply. Where cleaner air might be required for instrumentation or other operations, individual coalescing filters would be required. A particulate filter with replacable cartridge would be installed in the incoming line in the mechanical room.

6. Non-Potable Water Supply

This supply line would also enter the WSF at the east wall from the new feed line being installed. A water meter would be put in-line to record

the volume added to the storage tanks. A particulate strainer would be installed to remove large solids.

Non-potable water would be piped to hose connections at the following locations:

- All truck pads and fork lift ramp.
- All tank containments (pump level and mezzanine level).
- All transporter unloading stations.
- Several points in the container storage area.

A water heater for non-potable water would also be provided in the mechanical room. This hot water would be piped to each tank containment.

J. INSTRUMENTATION AND CONTROLS

1.General Description

Instrumentation would be installed on the storage tanks, pumps, valves, tanker trucks, and containments to provide the following information:

- Storage tank and tanker truck liquid level.
- Valve position (open or closed).
- Pump activity
- Floor sump level (for spill control in containments)
- Air hazards

Critical operation steps would be interlocked to prevent discharge of waste solutions when not appropriate. For instance, a high storage tank level would close the feed valve and/or disengage the transfer pump filling the tank.

In all places practical, sensing devices would monitor continuous variables. This would provide greater control, especially if coordinated with a computerized control station.

2. Tank Level Sensors

The solutions in the storage tanks will vary in composition because of the inherent variability in waste sources. Therefore a sensor that is not affected by composition changes is preferred. Ultrasonic techniques have this capability. Each storage tank sensor would be permanently flange mounted on the top of the tank and include a continuous volume readout, a low level signal, high level signal and maximum level alarm.

The tanker truck level sensor would be a removable ultrasonic unit that would provide an alarm when the tanker liquid level is close to capacity.

3. Pump and Valve Controls

Pumps would be activated by electrical solenoid valves on the air supply feed lines. Diaphragm valves would be manually opened or closed, except those automated for safety which would be activated either by direct electrical actuator control or by electrical solenoid valves on an air actuator. Manual override would be incorporated in the automated valve body to allow for operator control. Limit or position switches at each valve would feed information to the control room PLC to provide system status and determine if a chosen pump operation is acceptable.

Pump controls would be located at the storage tank, tanker unload station, transporter unload station, and the CWTP discharge location when applicable. A destination selector switch and valve position acknowledge light would be part of the pump control box. If the valves were in the correct position for the transfer selected, the status light would acknowledge and allow the operator to initiate the transfer.

4. Air Hazard Sensors and Alarms

The acid and alkali storage tank areas would be monitored for cyanide and hydrogen gas levels to detect an emergency level. The detectors would activate locate and remote alarms. The ignitable storage tank area would be monitored for volatile organics. The truck bays would be monitored for either oxygen depletion or excess carbon monoxide.

5. Security and Communications

The size of the WSF and the potential for separation of personnel due to the building segregation suggest that all areas would best be serviced by a page and answer communication system. The center for directing this activity would be the Control Room. Closed circuit television cameras would be placed in each of the six areas of operation in the building. Monitors would be provided in the control room.

Personnel access to the building would be through the control room or through other selected doors on the north and east sides of the building; other personnel doors would be for exit only. Truck access would also be managed by the Control Room operation.

III SCHEDULE

A schedule was developed for the design, construction, and other activities associated with the proposed Waste Storage Facility. This schedule includes activities connected with the demolition of the existing Casablanca building, the construction of the proposed WSF, and the construction of the process facilities within the building. In addition, certain other activities such as funding, relocation or removal of certain utilities, and permit applications and approvals are also included.

The computer program used to study the schedule was "Project Scheduler" (Version 4) by Scitor Corp., 393 Vintage Park Rd., Foster City, CA 94404.

The data inputs used included: a suitable name for each identified portion of the job, a suitable Work Breakdown Classification code (used for categorizing projects into groups), the duration of each project in suitable units, and the identification of each project or projects which would have to be completed prior to the start of or finish of the current project, or which could not be started before the current project is started. In addition, if there were definite date requirements, these may be specified together with specific job start dates.

During the implementation of this project, the status of each individual project could be used as input. With this, the schedule would be revised to show the degree to which it is ahead or behind schedule, and in the event an individual project is on the critical path it would also be possible to determine the amount of delay incurred and what must be done to correct the situation.

Several different outputs are available from the program. The two most important are:

- Gantt chart, which may be collapsed to any level available in the Work Breakdown Code structure,
- Network (Critical Path) diagram, which shows the interrelationships between various jobs and work paths graphically.

These are used together to determine the item(s) which are on the critical path and what the schedules for these items are. In addition, a number of other reports are available, including the Job Column Report, which can be arranged to produce a tabular listing of a variety of information about each project. Using the program output, the schedule in the Appendix was developed.

The schedule shows two critical paths. These paths split after construction of the shell of the building and the mezzanine. The first path, which is routed generally through the installation of interior utilities in the new building and specifically through the installation and testing of the fire protection system, is scheduled for completion in late December, 1991. At that time partial beneficial occupancy of the building would be possible for storage of drummed wastes in the northern portion of the building. This path is critical due to the assigned beneficial occupancy date. The second path is the path through the installation of the storage tanks and their piping. This path leads to the completion of the building in March 1992.

APPENDIX

DRAWING NO.	TITLE*
1.	SITE PLAN
2.	UTILITY PLAN
3.	FLOOR PLAN & MEZZANINE PLAN
4.	BUILDING ELEVATIONS & DETAILS
5.	SCHEMATICS I
6.	SCHEMATICS II
7.	SCHEDULE

* All drawings are designated "Waste Storage Facility"

All drawings are dated 1-14-91

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

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Description of Oversized Material, if applicable:

Figure 1: Site Plan 1/14/1991

[X] Map [ ] Photograph [] Other (Please Specify Below)

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Description of Oversized Material, if applicable:

Figure 2: Utility Plan 1/14/1991

[X] Map [ ] Photograph [] Other (Please Specify Below)

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Description of Oversized Material, if applicable:

Figure 3: Floor Plan & Mezzanine Plan 1/14/1991

[X] **Map** [ ] **Photograph** [] **Other** (Please Specify Below)

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Description of Oversized Material, if applicable:

Figure 4: Building Elevations & Details 1/14/1991

[X] **Map** [ ] **Photograph** [] **Other** (Please Specify Below)

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Description of Oversized Material, if applicable:

Figure 5: Schematics I 1/14/1991

[X] **Map** [ ] **Photograph** [] **Other** (Please Specify Below)

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Description of Oversized Material, if applicable:

Figure 6: Schematics II 1/14/1991

[X] Map [ ] Photograph [] Other (Please Specify Below)

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Description of Oversized Material, if applicable:

Figure 7: Construction Schedule 1/14/1991

[X] Map [ ] Photograph [] Other (Please Specify Below)

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APPENDIX D

Designation	Title	Content
D-5	Maxium Container Storage Capability	Shows various arrangements for storage of containers in CWTP-5 & 6

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] **Oversized** (in Site File) [ ] **Oversized** (in Map Drawer)

[ ] **Page(s) Missing** (Please Specify Below)

[ ] **Potential FOIA Exempt** [ ] **Other** (Please Provide Purpose Below)

Description of Oversized Material, if applicable:

Figure D5: Maximum Container Storage Capability 11/12/1991

[X] **Map** [ ] **Photograph** [] **Other** (Please Specify Below)

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APPENDIX D

Designation	Title	Content
D-6	Contrustion Drawings For Existing Facilities	1. CWTP-5, 3 Drawings 2. CWTP-6, 2 Drawings

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

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[ ] Page(s) Missing (Please Specify Below)

[ ] Potential FOIA Exempt [ ] Other (Please Provide Purpose Below)

Description of Oversized Material, if applicable:

Figure D6: Constuction Drawings 6/7/1989

[X] Map [ ] Photograph [] Other (Please Specify Below)

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NOTE: PAGES 41 THRU 66 DELETED

SECTION E - PROCEDURES TO PREVENT HAZARDS

This section describes the security procedures and equipment; inspection plan; preventive procedures, structures and equipment; precautions to prevent accidental ignition or reaction; and handling and storage of incompatible wastes at the East Hartford Plant.

1. Security Procedures and Equipment

The unknowing entry of persons or livestock onto the active portion of the plant is prevented by the following measures:

a. The Concentrated Waste Treatment Plant is surrounded by a fence and signs have been posted near all gates and on all approaches to the facility stating the following:

CAUTION

HAZARDOUS WASTE

STORAGE AREA

UNAUTHORIZED PERSONS

KEEP OUT

b. The locations of all existing signs in the Concentrated Waste Treatment Plant along with the specific wording of these signs are identified on Figure B-3. Some signs will be removed and additional signs will be added once the planned waste storage facility has been constructed. The area is staffed on a 24 hour basis. The entire East Hartford complex is staffed on a 24 hour/day, 7 day/week basis by security and fire personnel.

c. In addition to the fence around the Concentrated Waste Treatment Plant, the entire East Hartford complex is surrounded by a fence, and entrance gates are staffed with security guards on a 24 hr/day, 7 day/week basis. Only

employees wearing employee identification badges are allowed on the property. Furthermore , the plant is patrolled by security guards in cruisers, and the active portion of the facility, as well as the remote areas of the larger plant, are continuously monitored by closed circuit television at security headquarters.

2. Inspection Schedule

a. General

The treatment and storage areas are inspected as required to avoid any release of hazardous waste constituents to the environment and any threats to human health. Inspections are conducted and recorded as described herein and inspection records are maintained for three years.

Inspections are conducted daily or weekly in accordance with the schedule defined herein. The inspections cover the hazardous waste containers, the storage areas, loading/unloading areas and the related emergency equipment and supplies. The results of each inspection are recorded on inspection log sheets. Information on the log sheet includes the inspector's name and clock number, date and time of inspection, check points, areas to check, deficiency reports, and the signature of the foreman responsible for the correction of deficiencies. If a deficiency is noted, appropriate and complete information is recorded, including a description of the problem and the nature of repairs and required remedial action.

If inspections reveal that non-emergency maintenance is needed, it will be completed as soon as possible to preclude further damage and reduce the need for emergency repairs. If a hazard is imminent or

has already occurred during the course of an inspection or any time between inspections, the inspector will notify the Emergency Coordinator per the Contingency Plan and remedial action will be taken immediately.

b. PM System

A Preventative Maintenance (PM) System is in use at P&W which initiates the inspection of equipment so that repairs can be made before breakdowns occur. At predetermined intervals a computer card is issued for a particular piece of equipment, and the receiver of the card performs a preventative maintenance check on the piece of equipment according to prescribed inspection procedure. After the inspection is completed, the card is returned to the computer center and the date of completion of the inspection is entered into the computer. The inspector also records his time spent on the inspection, and in this way completion of the required inspection is assured.

RCRA required facility inspections are also initiated and recorded through the use of the PM System. Cards are issued for each area requiring inspection at the time intervals specified, and the inspection will take place using developed forms as provided in this section according to the described procedures. After inspection, the card is returned, the amount of time spent on the inspection is recorded, and the completed inspection form is submitted to the foreman.

c. Inspection Methods

Inspections of equipment and areas should be conducted in a manner acceptable for preventative maintenance. The receipt of a computer card for a particular area will signify that inspection is required, and the inspection will be conducted by the treatment plant operator assigned to the area requiring inspection using the inspection guides shown in this section. After inspection, the inspection guide will be given to the foreman, who will sign the form. The foreman has the responsibility for correcting any deficiencies noted on the report, and for filing the report. The foreman will indicate on the inspection report the date the deficiency was corrected, and will report these corrections in writing to his General Supervisor on a monthly basis.

d. Inspection Schedule and Logs

Model inspection logs are included in Exhibit E-1. Additional logs will be developed for the planned waste storage facility once it has been constructed. It is anticipated that these logs will be similar to those included in Exhibit E-1. The actual logs are generally similar but include additional information required for the PM system. The following will be the frequency of inspections:

AREA	FREQUENCY
CWTP-1(Treatment Building) Containers	Weekly
CWTP-2(Barrel Storage Building) Tanks	Daily
CWTP-2(Barrel Storage Building) Containers	Weekly
CWTP-3(Underground Storage Tanks)Tanks	Daily
CWTP-4(Transporter Storage Pad)Containers	Weekly
CWTP-5(Storage Building A)Containers	Weekly
CWTP-6(Storage Building B)Containers	Weekly
Less Than 90 Day Container Storage Areas	Weekly
Less Than 90 Day Tank Storage Areas	Daily
Loading/Unloading Areas	Daily When in Use

In addition to the inspections described previously, P&W maintains facility-wide safety and emergency equipment in addition to the safety and emergency equipment associated with the Concentrated Waste Treatment Plant. All facility-wide emergency and safety equipment is inspected on a routine basis with most items being inspected monthly.

These inspections include equipment associated with the Hazardous Waste Storage Areas and are performed in addition to those inspections being performed by Hazardous Waste Management Personnel. The inspections consist of checking for proper functioning of all equipment.

All fire protection equipment including, extinguishers, water valves, hydrants, hoses, water tanks, sprinkler systems, and the facility's emergency vehicles are inspected on a regular frequency in accordance with P&W's Loss Prevention Standard.

Fences, gates, and signs are visually inspected during the guard's rounds. Fences are checked for integrity and signs of tampering. Any gaps in the fence or worn parts are identified and reported for repair and/or replacement. Gates are checked to make sure they are securely locked during the guard's rounds. Guards also inspect the warning signs along the fencing.

3. Equipment

The East Hartford facility will take all the necessary precautions required to protect human life, property, and the environment. In the event of an emergency, the Emergency Coordinator

a tanker and sloped to a containment pit with the capacity to contain the contents of the tanker as well as precipitation from a 25 year 24 hour storm. There are three pads in use, separated into the categories of Acids, Alkali and Cyanide, and Oil. Each tanker pad has its own separate 500 gallon containment pit. Only if the spill is greater than 500 gallons will the liquid overflow this pit to a common 5000 gallon underground tank. The containment pits are checked for liquids before and after transfer operations. If liquids are detected, all liquids in the containment pits and underground tank will be pumped to the appropriate treatment tank. In addition, all spills onto the pads are washed down into the containment system, and pumped and treated accordingly. A bypass exists to direct rainwater from the pads directly to the wastewater treatment system. Procedures also call for this bypass to be closed at all times when waste transfer operations are occurring. Once the planned waste storage facility has been constructed, loading/unloading operations will take place within the building in containment areas.

Drums are loaded and unloaded directly from trucks into the building at a truck dock on the west side of the storage building. The building has several containment areas built under the floor, and the floors are sloped so that all spills are directed into containment. The containment pits must be pumped out manually into the treatment tanks and treated as required.

Drums and transporters will also be loaded/unloaded in containment areas within the planned waste storage facility once construction is complete.

Spill control and emergency equipment such as absorbent material, empty drums, telephones, fire protection equipment, personal protection equipment, etc. are located in the immediate vicinity of loading/unloading operations. This equipment is routinely inspected and maintained as discussed previously.

b. Runoff

All areas where hazardous wastes are stored have complete containment to prevent runoff. Rainfall can enter several of the secondary containment structures. These structures are inspected routinely and any accumulated liquids are collected and disposed of via off-site vendors or the NPDES Permitted Treatment Facility.

c. Prevention of Water Supply Contamination

There are no water supplies in the area and waste storage areas are provided with secondary containment to prevent the migration of waste should accidental releases or spills occur.

d. Mitigation of Effects of Power Failure

In the event of a power failure, activity in the Concentrated Waste Treatment Plant will stop until power is restored. Since all operations are manually controlled and there is no continuous flow of waste into the storage tanks, there is no danger of overflow or incomplete treatment during a power failure. The facility alarm system is provided with backup a power supply capable of operating the system in the event of power failure.

EXHIBIT F - 1
SPCC Plan
For Oil Pollution Prevention
and
Contingency Plan
For
Hazardous Waste Management

EXHIBIT D

EVACUATION PLAN

In the event of a sudden and uncontrollable occurrence such as a fire, explosion, or major uncontrollable chemical spill, and if the degree of risk precludes making an effort to stop or diminish the effects of the occurrence, the area of the occurrence should be evacuated immediately and in an orderly and efficient manner. Employees should utilize any of several exits (described below) available at the treatment areas. The public address system will be used to notify all sections of the Concentrated Waste Treatment Area of emergency instructions.

Once evacuation has been called, employees shall proceed to the nearest building exit, leave the area, and assemble in front of the Maintenance Building on Willow Street immediately for check in. Employees evacuating from the Klondike PCB storage building and the Colt Street treatment plant should also proceed to the front of the Maintenance Building on Willow Street immediately for check in using any available transportation. If transportation is not available, employees shall assemble at the following locations and await further instructions.

- Klondike PCB Storage Building: airport perimeter road
- Colt Street Treatment Plant: entrance gate at Colt Street.

A complete description of evacuation routes is presented below. Building maps, designating the building exits described below as possible evacuation routes are provided in Exhibit 1.

A) CONCENTRATED WASTE TREATMENT PLANT - Main Building (CWPT-1)

1) Pedestrian exit doors:

a) South side, ground level (level between basement and first floor). Exit under treatment platform to outside door on south side or into Main Building to outside on east side.

b) East side, first floor exits to treatment plant yard.

c) South side, platform level (level between first and second floor). Exits across treatment platform and down stairs to south side outside door or into Main Building and to outside door on east side.

2) Other exits:

a) West side, ground level - folding exit doors to treatment plant yard.

b) East side, first floor, transporter repair area - overhead exit door to treatment plant yard.

B) CONCENTRATED WASTE TREATMENT PLANT - Waste Storage Building (CWTP-2)

1) Pedestrian door exits:

a) North side, first floor exit to treatment plant yard.

b) West side, first floor exit to treatment plant yard.

2) Other Exits:

a) West side, first floor overhead door exits to treatment plant yard.

C) CONCENTRATED WASTE TREATMENT PLANT - Storage Building A (CWTP-5)

1) Pedestrian door exits:

a) West side of building, exit to treatment plant yard.

b) South side of building.

2) Overhead door exits:

a) Four on west side of building, exit to treatment plant yard.

D) CONCENTRATED WASTE TREATMENT PLANT - STORAGE BUILDING B (CWTP-6)

1) Pedestrian door exits:

a) North side of building, exit to treatment plant yard.

2) Overhead door exits:

a) Three on north side of building, exit to treatment plant yard.

E) CONCENTRATED WASTE TREATMENT PLANT - Planned Waste Storage Facility

1) Pedestrian door exits

a) All four sides, exit to yard or Willow Street

2) Overhead door exits

a) South side of building, exit to Willow Street

b) North side of building, exit to yard

F) CONCENTRATED WASTE TREATMENT PLANT - Yard Area

1) Fence exits are located on the east, west, and south sides of the yard, exit to maintenance building area, Willowbrook Road, and Willow Street, respectively.

G) PRE-TREATMENT PLANT

1) Pedestrian door exits:

a) South side.

b) East side.

2) Other Exits:

a) East side, overhead doors.

H) KLONDIKE PCB STORAGE BUILDING

1) Truck loading pad has open wall on east side.

2) Barrel storage area has overhead door on east side.

3) From either exit proceed through the fence gate and to the airport perimeter road.

I) COLT STREET TREATMENT PLANT

1) Pedestrian door exits:

a) South side of control building, upper level, exit via road to gate at Colt Street.

b) South side of control building, truck loading area, lower level, exit via road to gate at Colt Street.

c) North side of control building, upper level, exit onto rapid mix tank and use stairs at southwest corner, sidewalk and road to gate at Colt Street (NOTE: Use this route to exit from lower level pump room.

d) West side of control building from oil pump room, lower level, exit via road to gate at Colt Street.

e) South side of thickener gallery, exit via stairs, walk and road to gate at Colt Street.

2) Overhead door exits:

a) Three doors on west side of control building, truck loading area, lower level, exit via road to gate at Colt Street.

b) One door on south of control building, loading dock, upper level, exit via road to gate at Colt Street (NOTE: This exit has a four foot drop to grade and is to be used only if the personnel door is not usable).

3) Tanks and grounds:

a) Rapid mix tank and oil separator walkways, use stairs at southwest corner, sidewalk and road to gate at Colt Street.

b) Thickener tank walkways, use stairs on south side, sidewalk and road to gate at Colt Street.

c) Clarifiers and neutralization tank walkways, use stairs on west side and road to gate at Colt Street.

d) Other points on this site, use most direct safe route to gate at Colt Street.

4. Emergency Communication

As soon as possible after the occurrence, the following notification procedure should be followed:

FIRE HEADQUARTERS EXT 5111

After the above are notified, the Fire Dispatcher will resume the notification of emergency coordinators listed on page D-6, from the beginning.

EXHIBIT 1

EVACUATION ROUTES

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] Oversized (in Site File) [ ] Oversized (in Map Drawer)

[ ] Page(s) Missing (Please Specify Below)

[ ] Potential FOIA Exempt [ ] Other (Please Provide Purpose Below)

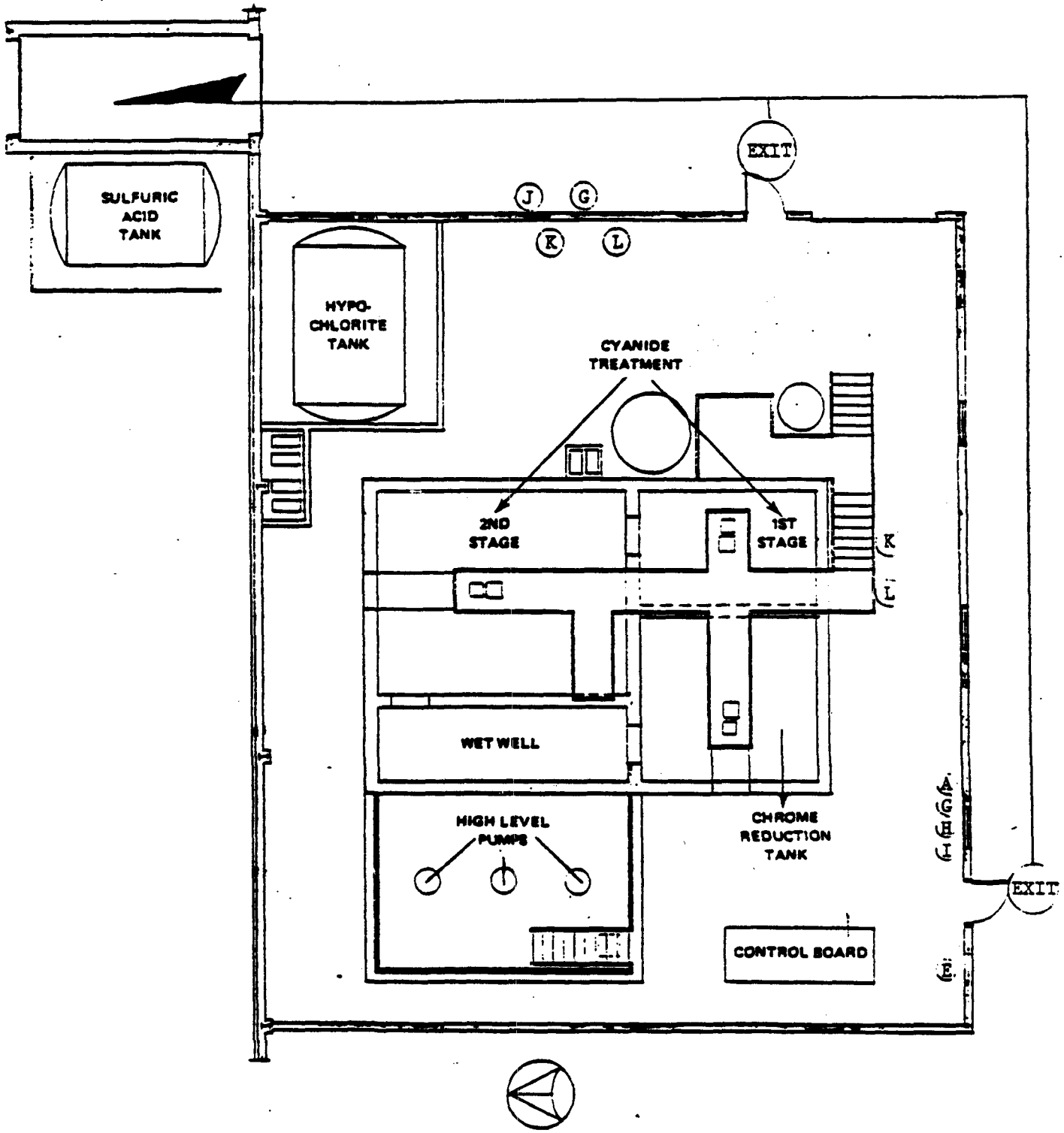
Description of Oversized Material, if applicable:

Figure 1: Evacuation Routes 11/12/1990

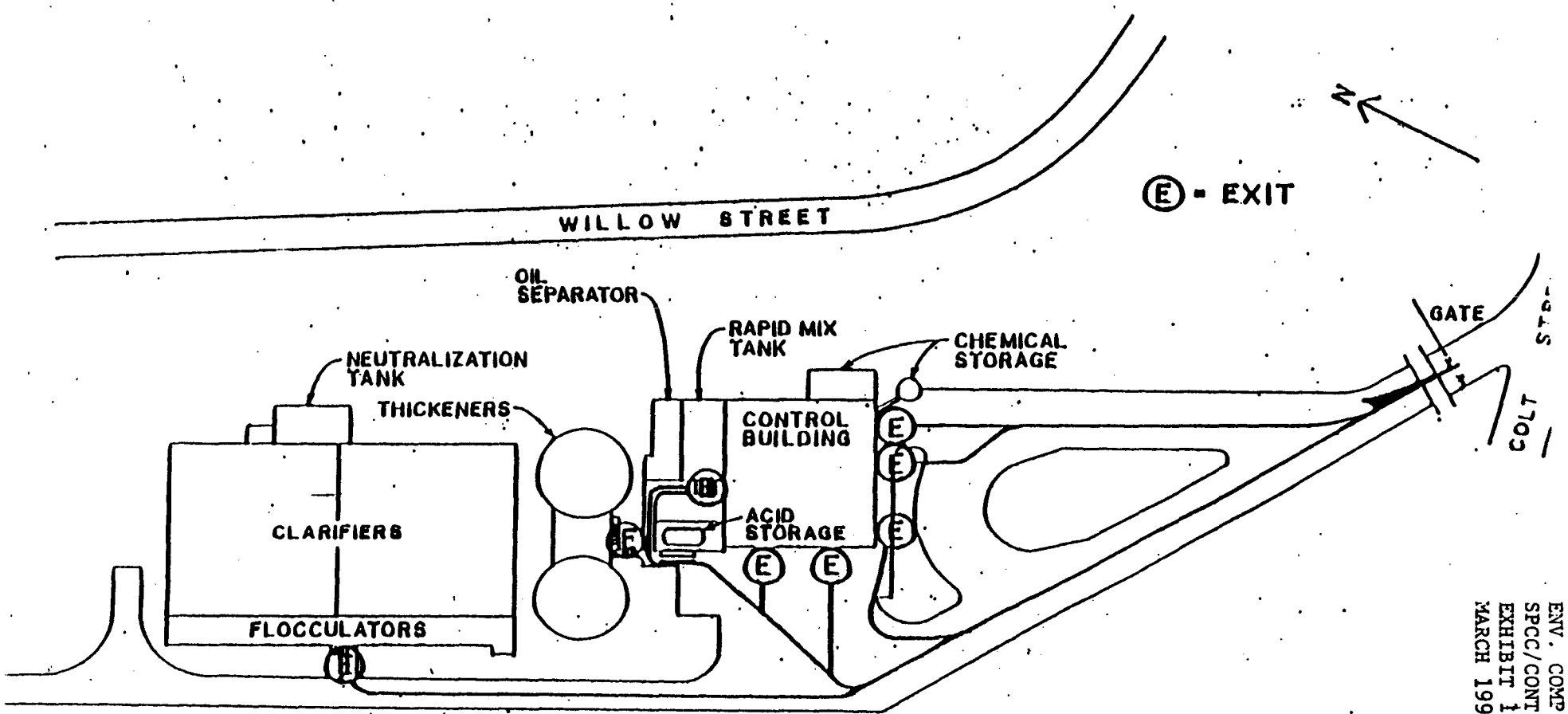
[X] Map [ ] Photograph [] Other (Please Specify Below)

* Please Contact the EPA New England RCRA Records Center to View This Document *

PRE-TREATMENT PLANT



COLT STREET TREATMENT PLANT
EVACUATION PLAN



P&W - EH
ENV. COMP. MANUAL
SPCC/CONT. PLAN
EXHIBIT 1
MARCH 1990 REV. NO. 0

P&W - EH
ENV. COMP. MANUAL
SPCC/CONT. PLAN
EXHIBIT 1
MARCH 1990 REV. NO. 0

KLONDIKE PCB STORAGE BLDG.

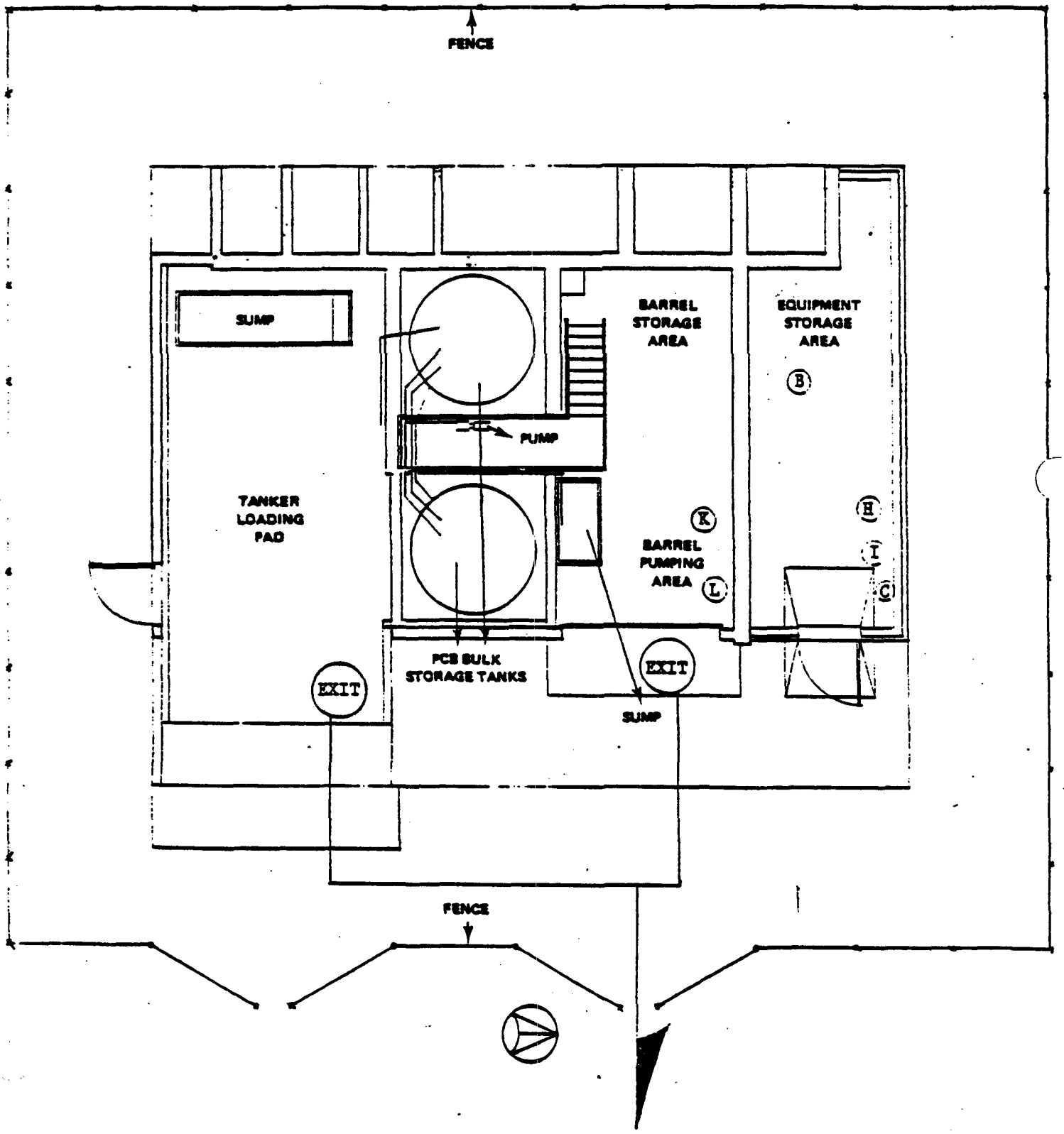


EXHIBIT E

EMERGENCY EQUIPMENT INVENTORY

1. Concentrated Waste Treatment Plant - Main Building (CWTP-1)

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes, and brooms
2) Barrels, transporters, and pumps
3) Soda ash, absorbent material, and oil spill control booms

B) COMMUNICATION EQUIPMENT

1) Telephones - two (2) in office and one (1) just inside the Main Building door on the east side.
2) PA System

C) FIRE EXTINGUISHING EQUIPMENT

1) 15 lb. carbon dioxide, first floor
2) 2.5 gal. water, first floor
3) 6 lb. ABC, second floor

D) PERSONNEL SAFETY EQUIPMENT

1) Full protective clothing, face shields, boots, aprons, gloves
2) Respirators
3) Scott Air Paks - two (2) on first floor; 30-minute duration
4) Emergency shower

a) Platform
b) Outside office door
c) Basement

5) Eye Wash Station

a) Inside east door
b) Basement
c) Laboratory

2. Concentrated Waste Treatment Plant - Barrel Storage Building (CWTP-2)

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes, and brooms
2) Barrels
3) Sawdust and absorbent material

B) COMMUNICATION EQUIPMENT

1) Telephone

C) FIRE EXTINGUISHING EQUIPMENT

1) 30 lb. ABC, outside
2) 6 lb. ABC, inside

D) PERSONNEL SAFETY EQUIPMENT

1) Full protective clothing, face shield, boots, aprons, gloves
2) Shower - northeast corner
3) Eye wash station - northeast corner

3. Concentrated Waste Treatment Plant - Transporter Storage Pad (CWTP-4)

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes, and brooms
2) Barrels
3) Sawdust and absorbent material

B) FIRE EXTINGUISHING EQUIPMENT

1) 30 lb. ABC, outside

D) PERSONNEL SAFETY EQUIPMENT

1) Full protective clothing, face shield, boots, aprons, gloves
2) Eye wash station

4. Concentrated Waste Treatment Plant - Storage Building A (CWTP-5)

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes, and brooms
2) Barrels
3) Sawdust and absorbent material

B) COMMUNICATION EQUIPMENT

1) Telephone

C) FIRE EXTINGUISHING EQUIPMENT

1) 30 lb. ABC, outside
2) 6 lb. ABC, inside

D) PERSONNEL SAFETY EQUIPMENT

1) Full protective clothing, face shields, boots, aprons, gloves
2) Eye wash station - inside on south wall

5. Concentrated Waste Treatment Plant - Storage & Building B (CWTP-6)

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes, and brooms
2) Barrels
3) Sawdust and absorbent material

B) COMMUNICATION EQUIPMENT

1) Telephone

C) FIRE EXTINGUISHING EQUIPMENT

1) 30 lb. ABC, outside
2) 6 lb. ABC, inside

D) PERSONNEL SAFETY EQUIPMENT

1) Full protective clothing, face shields, boots, aprons, gloves
2) Eye wash station - inside on south wall

6. Concentrated Waste Treatment Plant - Planned Waste Storage Facility

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes, and brooms
2) Barrels
3) Sawdust and absorbent material

B) COMMUNICATION EQUIPMENT

1) Telephones
2) PA system
3) Closed circuit television cameras

C) FIRE EXTINGUISHING EQUIPMENT

1) Automatic sprinkler systems
2) 30 lb. ABC's, outside
3) 6 lb. ABC's, inside

D) PERSONNEL SAFETY EQUIPMENT

1) Full protective clothing, face shields, boots, aprons, gloves
2) Respirators
3) Scott air paks
4) Emergency showers and eye wash stations

7. Pre-Treatment Plant

A) SPILL CONTROL EQUIPMENT

1) Brooms
2) Barrels
3) Pump, hose

B) COMMUNICATION EQUIPMENT

1) Telephone

C) FIRE EXTINGUISHING EQUIPMENT

1) Sprinkler System
2) 15 lb. carbon dioxide extinguisher

D) PERSONNEL SAFETY EQUIPMENT

1) Face shield, boots, aprons, gloves
2) Scott Air Paks
3) Shower and eye wash stations

a) Next to sink on south side
b) East Wall

8. Klondike PCB Storage Building

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes, and brooms
2) Barrels
3) Speedi-Dri

B) COMMUNICATION EQUIPMENT

1) Telephone

C) FIRE EXTINGUISHING EQUIPMENT

1) Fire hydrant
2) 30 lb. dry chemical extinguisher

D) PERSONNEL SAFETY EQUIPMENT

1) Full protective clothing, face shields, boots, aprons, gloves
2) Respirators
3) Shower and eye wash station

a) Near barrel pump in storage room

9. Colt Street Treatment Plant

A) SPILL CONTROL EQUIPMENT

1) Shovels, rakes and brooms
2) Pump, hose, and wet-vac
3) Sodium bicarbonate

B) COMMUNICATION EQUIPMENT

1) Telephone

C) FIRE EXTINGUISHING EQUIPMENT

1) Fire hydrant
2) Carbon dioxide extinguisher
3) Dry chemical extinguisher

D) PERSONNEL SAFETY EQUIPMENT

1) Face shield, boots, gloves
2) Shower and eye wash station

a) Main Level - outside office
b) Lower Level

RESOURCE CONSERVATION AND RECOVERY ACT
PART B PERMIT APPLICATION
UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY
400 MAIN STREET
EAST HARTFORD, CT
CID 990672081

TABLE OF CONTENTS

VOLUME III

TABLE OF CONTENTS

SECTION H - CLOSURE PLAN AND FINANCIAL REQUIREMENTS

A. INTRODUCTION

The present Closure Plan is provided in accordance with the RCRA regulations for the following facilities:

- Storage Building A (CWTP-5)
- Storage Building B (CWTP-6)
- Planned Waste Storage Facility

The first two of the facilities listed above are existing active units at the Concentrated Waste Treatment Plant (CWTP) at P&W, East Hartford. The third facility, is planned to be constructed to replace some of the existing container and tank storage areas at the Concentrated Waste Treatment Plant.

The units that P&W is in the process of replacing include three container storage areas (CWTP-1, CWTP-2, CWTP-4) and two tank storage areas (CWTP-2, CWTP-3) and are scheduled to be closed in 1993. The remaining active units at the CWTP (CWTP-5 and CWTP-6) will continue to be used for permitted storage of hazardous waste until they are ultimately closed in the year 2041.

Two other units that are in the process of being closed include the Burn-Zol hazardous waste incinerator and the wax/solvent storage tank. P&W has an approved partial Closure Plan for the Burn-Zol hazardous waste incinerator, and is presently in the process of implementing closure of this unit. Furthermore, on December 11, 1990 P&W submitted a notification of partial closure to EPA, Region I and to the DEP, to implement closure of the wax/solvent storage tank located in the same building as the former incinerator, in the CWTP area.

The approved partial closure plan for the Burn-Zol hazardous waste incinerator is included in Appendix H-1, and the interim report on closure of this unit is included in Appendix H-2. The partial closure plan for the

wax/solvent storage tank is provided in Appendix H-3 while the closure plan for the remaining three container storage areas and two tank storage areas is given in Appendix H-4.

Closure will be performed in a manner that:

1. Minimizes the need for further maintenance, and;
2. Controls, minimizes or eliminates to the extent necessary, postclosure release of hazardous wastes to groundwater, surface water or the atmosphere.

A copy of the closure plan will be maintained on-site at the East Hartford facility until the certification of closure completeness has been submitted to and accepted by the U.S. Environmental Protection Agency (EPA) Region I and the Connecticut Department of Environmental Protection (CTDEP). P&W will notify the EPA Regional Administrator and CTDEP Commissioner at least 45 days prior to the date of final closure is expected to begin. Upon completion of closure of each area, P&W will submit a certification by both P&W and an independent registered professional engineer to the Regional Administrator and the CTDEP Commissioner that the facility has been closed in accordance with the specifications in the approved closure plan. This site-closure certification will include Appendix IX test results, all other pertinent analytical data plus the final confirmation sampling results. Included also will be:

- Photographic records of the closure documenting each construction step of the closure process
- Contractors daily log
- A list of any departure from the approved plan with rationales in accordance with 40 CFR 264.112(c).

In subsequent sections, this Closure Plan provides a description of general methods to be applied and precautions to be taken in closing the two existing hazardous waste storage facilities and the Planned Waste Storage Facility. Table H-1 lists the maximum waste inventory, options for ultimate or partial closure and a schedule for ultimate closure of the units. A summary of specific closure methods applicable to the two container storage areas and the Planned Waste Storage Facility are described in detail in the following sections.

B. CLOSURE REQUIREMENTS

a. General

This section provides a description of general methods to be applied and precautions to be taken in closing the two container areas CWTP-5 and CWTP-6 and the container and tank storage areas at the Planned Waste Storage Facility. Table H-1 lists the maximum waste inventory, options for ultimate or partial closure, and a schedule for ultimate closure of these areas.

In order to determine the effectiveness of the closure activities, surface samples will be analyzed both before and after decontamination. A list of hazardous constituent parameters to be used in establishing the performance standard will be developed for each storage area. These clean standard parameter (CSP) lists will consist of all the 40 CFR 264, Appendix IX parameters (Appendix IX) detected during pre-decontamination sampling, and possibly certain 40 CFR 261 Appendix VIII parameters (Appendix VIII) which are not included in Appendix IX. The Appendix VIII parameters will be selected based on the potential for their presence in any given storage area. The inclusion of specific Appendix VIII parameters will be based on a review of all available information including:

- Storage Records
- Waste Product Records
- Material Safety Data Sheets
- Process Information
- Waste Characterization Information

Prior to decontaminating storage area surfaces, the surfaces will be sampled and analyzed for all Appendix IX constituents. After decontamination, samples of each storage area surface will be analyzed for each of the

parameters on the CSP list in order to demonstrate that the cleanup criteria have been met. A clean standard for each identified parameter on the CSP list will be developed for all exposure pathways. The pathways to be addressed are:

- Direct Ingestion
- Dermal Contact

Health/risk based target standards will be established for each parameter identified and each of the above exposure pathways. The clean standards to be used, as specified in the Interim Final RCRA Facility Investigation (RFI) Guidance, EPA 530/SW-89-031, May 1989 is:

- Maximum contaminant levels (MCLs)
- Risk-specific doses (RSD)
- Reference doses (RfD)
- State of Connecticut Action Levels (CTAL).

Later versions of this document may be used if available at the time of closure. The only exceptions to this hierarchy will be if a waste constituent has an RfD lower than its RSD, or if a CTAL is lower than the EPA values. In this case the more stringent values will be used.

In order to establish the clean-up criteria for soil and air, the following performance standards will be used.

If EPA or State of Connecticut recommended exposure limits do not exist for a constituent at the time of closure, the standard will be background levels. If background values are used, they will be statistically verified. Any background values that are shown to be in excess of the health/risk based standards will not be used unless it is demonstrated that the residual constituents are truly indicative of background concentrations and not the result of waste contamination.

It should be noted that concrete samples have already been collected and

analyzed during the construction of the container storage areas CWTP-5 and CWTP-6, prior to storing any waste or other material in these areas.

This testing data is considered representative of background conditions, since it provides information on the composition of the concrete prior to any use of the building. Similarly, concrete samples will be collected and analyzed from the Planned Waste Storage Facility during the construction process. Alternatively, background concrete samples may be collected from areas unaffected by manufacturing processes, or waste or product storage.

Once the CSP list is developed, specific sample handling and analytical methods will conform to those specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846.

b. General Closure Requirements

1. Health and Safety - The decontamination crew will consist of a minimum of two individuals who will be adequately clothed, including self-contained breathing apparatus, if required, and coveralls. Supervision of the decontamination process will include an individual(s) responsible for operation of the TSDF.

The primary basis for the level of personnel protection selected is determined by:

- The type, toxicity, measured concentration, and permissible exposure limits of the chemical substances.
- The potential or measured exposure to substances in the air, splashes of liquids, or other direct contact with materials due to the work being performed.

The personnel protective equipment used to protect the body against chemical hazards is divided into four categories according to the degree of protection:

- Level A - Will be worn when the highest level of respiratory, skin, and eye protection is needed.

- Level B - Will be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection is needed.

- Level C - Will be worn when the types of airborne substances are known, the concentrations have been measured, and the criteria for using air-purifying respirators are met.

- Level D - This level is used where no respiratory or skin hazards are present. Level D protection is primarily a work uniform providing minimal protection.

It is not anticipated that personnel will need to use Levels A or B although this determination will be made after the complete CSP list is developed and specific hazardous constituents are known.

2. Sudden or Non-Sudden Release, or Fire Hazard - The decontamination process will be considered as an activity presenting a high risk potential for release of hazardous waste or fire/explosion hazard. As such, the appropriate mechanisms of the Contingency Plan will be ready for activation.

3. Scheduling

Completion of closure will be within 180 days of agency approval of the closure plan or from the last receipt of hazardous wastes; whichever occurs later. The schedule for closure including milestone dates follows:

DAY	ACTIVITY
-45	Written notification of anticipated closure.
0	EPA and CTDEP approved closure plan or last receipt of hazardous wastes (if that is later).
90	All hazardous wastes disposed of off-site at permitted facilities.
100	Inspection for residual wastes complete and all damaged areas identified. Samples collected from damaged areas and analyzed appropriately.
120	Floors cleaned and rinsed. Confirmatory chip samples taken of the concrete containments and soils.
150	Floor repaired as necessary for further use.
180	Completion of closure and certification submittal to the EPA Regional Administrator and CTDEP Commissioner.

All final closure activities will be supervised and certified by an independent registered professional engineer, in addition to P&W personnel.

P&W may require an extension of closure time depending on the season that closure begins.

4. Partial Closure - Partial closure potential for the hazardous waste storage areas has been noted on Table H-1. The procedures described for ultimate closure would be followed for partial closure.

5. Certification - The following certification should be submitted to the EPA Region I Administrator and the Commissioner of CT DEP upon completion of closure:

"I,_____, for Pratt & Whitney, United Technologies
(Name)

Corporation, owner and operator of _____,
(Site)

a hazardous waste storage area and I, _____, P.E.,
(Name)

employed by _____, certify by means of our
(Firm)

signatures, that the facility named above has been closed in accordance with the method specified by the Closure Plan, and attached hereto. Closure was completed on _____, after receiving the final
(Date)

volume of material on _____".
(Date)

c. Amending the Closure Plan

P&W will amend the closure plan whenever changes in operating plans or facility design affect the closure plan, or whenever there is a change in the expected year of closure. If a request for permit modification is made

to authorize a change in operating procedures or facility design, P&W will also request a modification to the Closure Plan at the same time. If a permit modification is made requiring a change in operating procedures or facility design, P&W will make a request for modification of the Closure Plan within 60 days after the change in plans or design occurs.

d. Closure of Container Storage Areas

This closure plan describes the procedures to be followed during closure of the following areas:

(1) Storage Building A (CWTP-5)

(2) Storage Building B (CWTP-6)

(3) Planned Waste Storage Facility

For these areas it is anticipated that the inventory of hazardous wastes remaining at closure will not exceed the maximum inventory value listed in Table H-1. The procedures for are as follows:

1. Collect two composite concrete chip samples from the containment base of each unit. Each composite will be made up of several discrete samples collected from discolored, soft or otherwise damaged areas to represent worst case conditions. Each composite sample will then be analyzed for Appendix IX constituents.
2. Dispose of all remaining hazardous wastes off-site via licensed vendors for disposal at permitted TSDF's or through the on-site NPDES permitted industrial wastewater treatment system.
3. Evaluate the results of Appendix IX analyses to establish the clean standard parameter (CSP) list and identify corresponding health/risk based target standards.

TABLE H-1

CLOSURE PLAN SUMMARY
CWTP
EAST HARTFORD, CONNECTICUT

Item	Process	Process Code	Maximum Inventory	Closure Options Partial/Ultimate	Schedule For Ultimate Closure Start*/Complete	Year
CWTP-5	Storage Building A	S01	19,000 gallons	x	April, September	2041
CWTP-6	Storage Building B	S01	18,500 gallons	x	April, September	2041
-	Planned Waste Storage Facility	S01	68,000 gallons	x	April, September	2041
-	Planned Waste Storage Facility Tank Storage Areas	S02	126,000 gallons	x	April, September	2041

*Assumed start date. Completion date based on estimated time of performance of closure.

4. If health/risk based standards do not exist for a specific parameter at the time of closure, a minimum of four background concrete chip samples will be collected and analyzed for the CSP list. This data will be used for comparison in the absence of health/risk based standards.

5. A Health and Safety Plan, specific to the site being closed and the CSP list, will be prepared to cover the closure activities to be performed.

6. The containment areas will then be scrubbed with the appropriate decontamination solution depending on the type(s) of hazardous waste stored in the area, and thoroughly rinsed with water. A summary of recommended decontamination solutions for various types of hazardous wastes along with the formulations of the decontamination solutions is provided in Table H-2.

   Spent decontamination solutions and rinsewaters will be collected in existing floor sumps or will be contained through the use of dikes to prevent wash water from migrating into clean areas. This rinsate will be collected using a wet/dry vacuum then collected and discharged to the NPDES permitted industrial wastewater treatment system.

7. All equipment used in closure activities will either be decontaminated or collected and disposed of as hazardous waste. Small manual tools will be decontaminated using an industrial grade non-phosphate detergent and water solution. Equipment used during decontamination, such as brushes, gloves, disposable suits, etc., will be collected in a 55-gallon drum and disposed

TABLE H-2
CLEANER SOLUTION FORMULATIONS

DECON SOLUTION A - A solution containing 5 percent sodium carbonate (Na_2CO_3 and 5 percent trisodium phosphate (Na_3PO_4).

To 10 gallons of water, add 4 pounds of sodium carbonate (soda ash) and 4 pounds of trisodium phosphate. Stir until evenly mixed.

DECON SOLUTION B - A solution containing 10 percent calcium hypochlorite ($Ca(ClO)_2$).

To 10 gallons of water, add 8 pounds of calcium hypochlorite. Stir with a wooden or plastic stirrer until evenly mixed.

DECON SOLUTION C - A solution containing 5 percent trisodium phosphate. This solution can also be used as a general purpose rinse.

To 10 gallons of water, add 4 pounds of trisodium phosphate. Stir until evenly mixed.

DECON SOLUTION D - A dilute solution of hydrochloric acid (HCl)

To 10 gallons of water, add 1 pint of concentrated hydrochloric acid. Stir with a wooden or plastic stirrer.

TYPE OF HAZARDOUS WASTE	PREFERRED DECONTAMINATION SOLUTION
Inorganic acids, metal processing wastes	A
Heavy metals, i.e., mercury, lead, cadmium	A
Pesticides, fungicides, chlorinated phenols, dioxins, PCPs	B
Cyanides, ammonia, and other non-acidic inorganic wastes	B
Solvents and organic compounds, such as trichloroethylene, chloroform, and toluene	C, A
PBBs and PCBs	C, A
Oily, greasy, unspecified wastes	C
Inorganic bases, alkali, and caustic waste	D

of as hazardous waste using licensed transporters and permitted disposal facilities. Portions of larger tools (i.e. lifts, hoists) which have come in contact with the waste will be decontaminated by steam cleaning. All rinsate generated during decontamination activities will be collected and discharged to the NPDES permitted industrial wastewater treatment system.

8. Once decontamination has been completed as described above, the container storage area will be inspected for cracks or other visible signs of deterioration. If cracks or deteriorated areas are observed then the sampling plan discussed below will be modified to include a representative portion of these areas. For container storage areas that include sumps, one of the samples will be collected from the bottom of the sump.

9. If no cracks, or visible signs of deterioration are found, then non-statistical "judgment sampling" of potentially contaminated areas, based on visual observations, is not possible. Instead, verification sampling will be performed according to the following procedure.

Each of the areas, after decontamination, will be gridded and sampled at locations corresponding to randomly selected grid nodes. The size of the grid interval is determined by this generally accepted mathematical formula:

$GI = (A/3.14)^{0.5}/2$, where:

GI = grid interval, ft

A = area to be gridded, sq. ft.

The calculated value for the grid interval is then rounded off to the nearest integer and the container storage area is gridded.

The number of samples (n) to be obtained from each slab is determined by the square root of the number of grid nodes. A random number table or generator is typically used to determine which grid nodes or grid areas will be sampled.

Table H-3 outlines the calculations of the number of verification samples required to be collected from each of the container storage areas to generate statistically viable data according to the procedure outlined above. The number of grid samples is the number of samples statistically required. A random number table procedure was used to calculate the exact location of these samples, which are shown in Figures H-1, H-2 and H-3 for the container storage areas. In addition to these samples, each containment sump will be sampled, raising the number of samples to be collected to the value shown in the last column of Table H-3. The locations of the containment sumps are also shown in Figures H-1, H-2 and H-3.

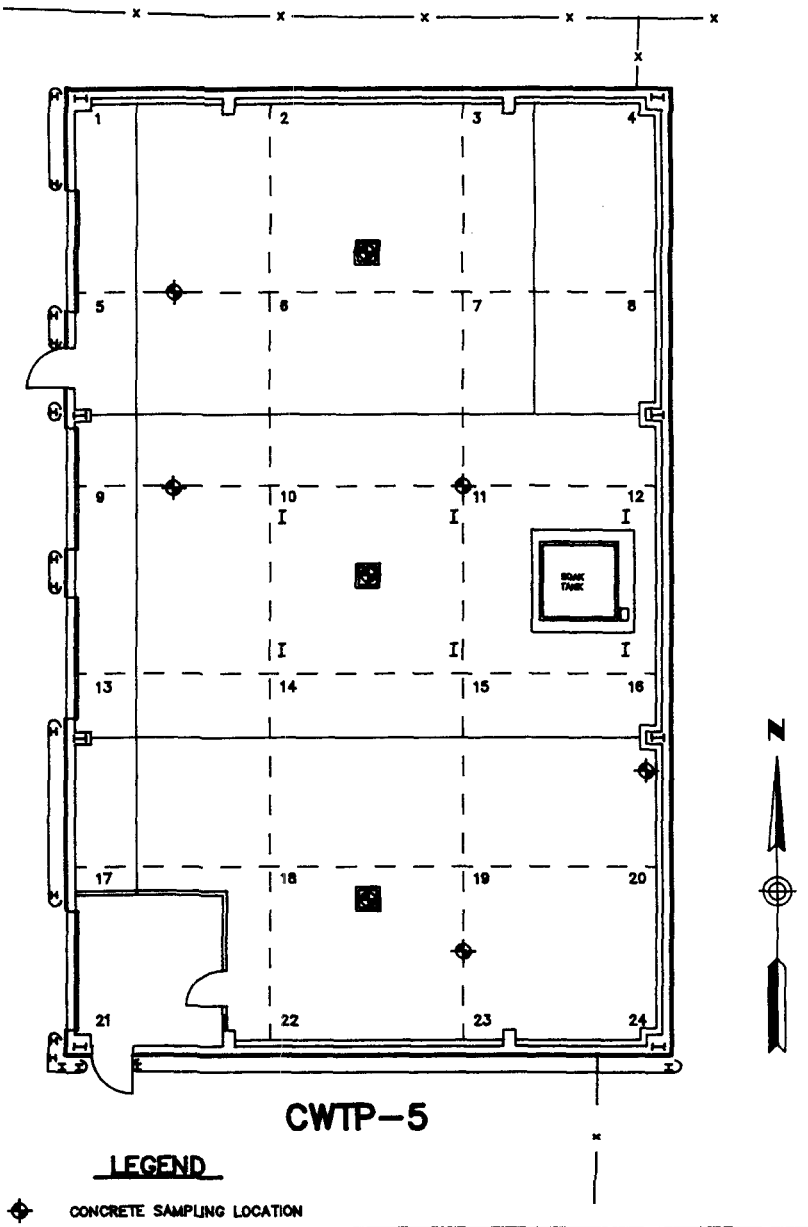
All samples will consist of concrete chip samples collected with chisel or concrete hammer drill. The portion of the tool in direct contact with the concrete will be cleaned between samples using an industrial non-phosphate detergent wash and a tap water rinse.

The resulting concrete chips will be transferred directly into laboratory supplied glassware. The field QA/QC program for

TABLE H-3
CONTAINER STORAGE AREAS
VERIFICATION SAMPLING

Item	Process	Area (Sq. Ft.)	Grid Interval (Ft)	No. of Grid Nodes	No. of Grid Samples	No. of Sump Samples	Total No. of Samples
CWTP-5	Storage Building A	3822	17	24	5	3	8
CWTP-6	Storage Building B	1794	12	21	4	3	7
Planned Waste Storage Facility:							
a)	Truck Pad (Typ. of 3)	1828	12	24	5	1	6
b)	Truck Pad #4	2527	14	21	5	2	7
c)	Transporter Unloading Station (Type A, Typ. of 2)	96	3	20	4	1	5
d)	Transporter Unloading Station (Type B, Typ. of 2)	144	3	25	5	1	6
e)	Container Management Area	24682	44	24	5	3	8
f)	Fork Lift Ramp	979	N/A	N/A	N/A	1	1

N/A: Not Applicable



LEA LOUREIRO ENGINEERING ASSOCIATES
CONSULTING ENGINEERS PLAINVILLE, CT

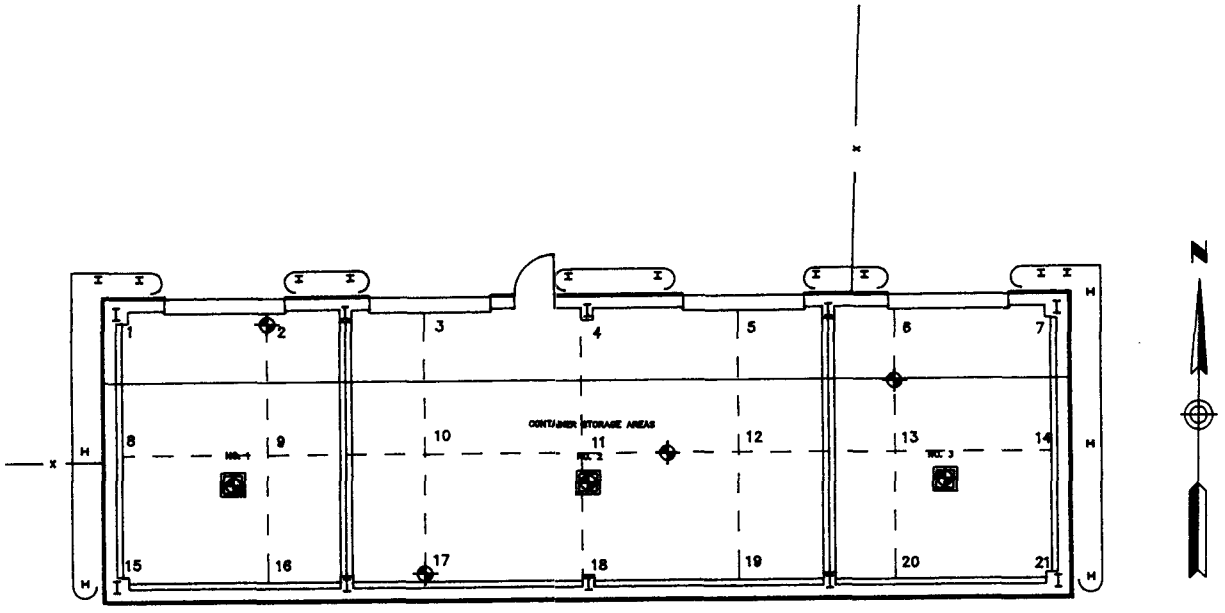
FIGURE H-1

RCRA PART B PERMIT APPLICATION
SAMPLING LOCATIONS
RCRA CLOSURE OF
CWTP-5 CONTAINER STORAGE AREA

COMM.NO. 971-10

CKD. BY	APP. BY	SCALE	DATE
N.S.,J.J.L.,G.J.	J.L.	1/16"=1'-0"	12/31/90

971104-1 (8)



CWTP–6

LEGEND

CONCRETE SAMPLING LOCATION

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FIGURE H–2
RCRA PART B PERMIT APPLICATION
SAMPLING LOCATIONS
RCRA CLOSURE OF
CWTP–6 CONTAINER STORAGE AREA

COMM.NO. 971–10

CKD. BY	APP. BY	SCALE	DATE
N.S.,J.J.L.,G.J.	J.L.	1/16"=1'–0"	12/31/90

971104-2 (a)

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2566

Facility Name: Pratt & Whitney

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] **Oversized** (in Site File) [ ] **Oversized** (in Map Drawer)

[ ] **Page(s) Missing** (Please Specify Below)

[ ] **Potential FOIA Exempt** [ ] **Other** (Please Provide Purpose Below)

Description of Oversized Material, if applicable:

Figure H3: Sampling Locations 1/31/1991

[X] **Map** [ ] **Photograph** [] **Other** (Please Specify Below)

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concrete chip samples will include one duplicate for every 10 samples and one trip blank to accompany the samples to the laboratory. Immediately following sample collection, each sample will be labeled and placed in an iced cooler. The samples will be transported under full chain-of-custody to a State of Connecticut approved laboratory.

The analytical testing and determination procedures are presented in Section C of this Closure Plan.

10. If based on an evaluation of the analytical data (comparison to available health/risk based levels or background) the decontamination efforts are deemed incomplete, the decontamination will be repeated until follow-up sampling demonstrates that parameters are at, or below, health/risk standards or are consistent with background levels. Any concrete chip sampling areas which exhibit levels consistent with background and either above or below health/risk levels will be considered representative of ambient background levels thus decontamination efforts will be deemed complete unless it is determined that background samples have been contaminated with the waste.

11. Complete the certification of closure as presented in Section B(b)(5) of this Closure Plan. Within 60 days of completion of all closure activities, the Certification of Closure will be sent by registered mail to the EPA Regional Administrator and the Commissioner of the Connecticut Department of Environmental Protection.

e. Closure of Tank Storage Areas

This section describes the procedures to be followed for closure of the tank storage areas in the Planned Waste Storage Facility. The facility will contain 21 aboveground tanks with secondary containment and several additional secondary containment areas for ancillary equipment and loading/unloading stations. It is anticipated that the inventory of hazardous wastes remaining at closure in the tank area of the Planned Waste Storage Facility will not exceed the maximum inventory value listed in Table H-1.

The procedures for closure of the tank storage area are as follows:

1. Collect two composite concrete chip samples from the containment base of each tank and ancillary equipment containment structure. Each composite will be made up of several discrete samples collected from discolored, soft or otherwise damaged areas to represent worst case conditions. Each composite sample will then be analyzed for Appendix IX constituents.
2. Dispose of all remaining hazardous wastes off-site via licensed vendors for disposal at permitted TSDF's or through the on-site NPDES permitted industrial wastewater treatment system.
3. Evaluate the results of Appendix IX analyses to establish the clean standard parameter (CSP) list and identify corresponding health/risk based target standards.
4. If health/risk based standards do not exist for a specific parameter at the time of closure, a minimum of four background concrete chip samples will be collected and analyzed for the CSP list.

5. A Health and Safety Plan, specific to the site being closed, and the CSP List, will be prepared to cover the closure activities to be performed.

6. All aboveground piping will be removed and disposed of as non-hazardous waste after decontamination. The tank itself and any tank components which have not been decontaminated will either be decontaminated, dismantled and disposed of as non-hazardous waste as described above, or dismantled and disposed of as a hazardous waste without prior decontamination. The cost estimate, presented in Section D of this Closure Plan is based on the assumption that the tank components will be removed and disposed of off-site as hazardous waste.

   Disassembly will be performed by manual dismantling and/or by the use of powered equipment. The option is available to use both hot or cold cutting techniques. The size of stockpiled components will be directly influenced by the disposal facilities requirements for landfilling. It is anticipated that all piping will be cut into four foot sections and that larger components will not exceed 10 feet in any dimension.

7. After removal of the tank components, as described above, the floor of the concrete containment area will then be scrubbed with the appropriate decontamination solution depending on the type(s) of hazardous waste stored in the area, and then thoroughly rinsed with water. A summary of recommended decontamination solutions for various types of hazardous wastes along with the formulations of the

decontamination solutions has been provided in Table H-2.

Spent decontamination solutions or rinsewaters will be collected in existing floor sumps or will be contained through the use of dikes to prevent washwater migrating into clean areas. This rinsate will be collected using a wet/dry vacuum then discharged to the NPDES permitted industrial wastewater treatment system.

8. All equipment used in closure activities will either be decontaminated or collected and disposed of as hazardous waste. Small manual tools will be decontaminated using an industrial grade non-phosphate detergent and water solution. Equipment used during decontamination such as brushes, gloves, disposable suits, etc., will be collected in a 55-gallon drum and disposed of as hazardous waste using licensed transporters and permitted disposal facilities. Portions of larger tools (i.e. lifts, hoists) which have contacted the waste will be decontaminated by steam cleaning. All rinsate generated during decontamination activities will be collected and discharged to the NPDES permitted industrial wastewater treatment system.

9. Once determination has been completed as described above, the tank storage area containments will be inspected for cracks or other visible signs of deterioration. If cracks or deteriorated areas are observed, then the sampling plan presented below will be modified to include a representative portion of these areas. Containment sumps will be sampled in addition to the samples discussed above. If no cracks or other visible signs of deterioration are found, then non-statistical "judgment sampling" of potentially contaminated areas, based on visual observations, is not possible. Instead, verification

sampling will be performed using a statistical procedure:

Each of the areas, after decontamination, will be gridded and sampled at locations corresponding to randomly selected grid nodes. The size of the grid interval is determined by this generally accepted mathematical formula:

$$GI = (A/3.14)^{0.5}/2, \text{ where:}$$

GI = grid interval, ft

A = area to be gridded, sq. ft.

The calculated value for the grid interval is then rounded off to the nearest interger and the tank containments are gridded. The number of samples to be obtained from each slab is determined by the square root of the number of grid nodes. A random number table or generator is typically used to determine which grid nodes or grid areas will be sampled.

Each of the 21 tank storage areas at the Planned Waste Storage Facility will be gridded separately to ensure that statistically significant data will be obtained from each area. The exact locations of these samples are shown in Figure H-3 for one of the areas only, typical of how each of the areas will be sampled.

Table H-4 outlines the calculation of the number of verification samples required to be collected from the Planned Waste Storage Facility. The number of grid samples is the number of samples statistically required, based on the random number procedure outlined above. In addition to these samples, the containment sumps will be sampled, raising the number of samples to be collected to the value shown in the last column of Table H-4. The locations of the containment sumps are also shown in Figure H-3.

TABLE H-4
TANK STORAGE AREAS
VERIFICATION SAMPLING

Item	Process	Area (Sq. Ft.)	Grid Interval (Ft)	No. of Grid Nodes	No. of Grid Samples	No. of Sump Samples	Total No. of Samples
Planned Waste Storage Facility:							
	Tank Containment Area (Typical of 21)	299	5	20	4	1	5

All samples will consist of concrete chip samples collected with a chisel or concrete hammer drill. The portion of the tool in direct contact with the concrete will be cleaned between samples using an industrial non-phosphate detergent wash and a potable water rinse. The resulting concrete chips will be transferred directly into laboratory supplied glassware. The field QA/QC program for concrete chip samples will consist of one field duplicate for every 10 samples and one trip blank to accompany the samples to the laboratory. Immediately following sample collection, each sample will be labeled and placed in an iced cooler. The samples will be transported under full chain-of-custody to a State of Connecticut certified laboratory. The analytical testing and determination procedures are presented in Section C of the Closure Plan.

10. If based on an evaluation of the analytical data (comparison to available health/risk based levels and background), the decontamination process is deemed incomplete, the decontamination will be repeated until follow-up sampling demonstrates that parameters are at or below health/risk standards or are consistent with background levels. Any concrete chip sampling areas which exhibit levels consistent with background and either above or below health/risk levels will be considered representative of ambient background levels thus decontamination efforts will be deemed complete unless background samples are deemed to be contaminated by the waste.

11. Complete the certification of closure as presented in Section C(b) (5) of this Closure Plan. Within 60 days of completion of all closure

activities, the Certification of Closure will be sent by registered mail to the EPA Regional Administrator and the Commissioner of the Connecticut Department of Environmental Protection.

C. LABORATORY ANALYSIS AND DATA EVALUATION

The analytical methods that will be used for analysis of concrete samples will be those described in the latest edition of EPA Publication SW-846 - Test Methods for Evaluating Solid Waste. The designated laboratory will follow all applicable internal QA/QC procedures outlined in SW-846.

Upon receipt of the analytical data, an initial evaluation of the results will be performed through data validation. Data validation includes a review of field QA/QC procedures (i.e. trip blanks, field duplicates) and laboratory QA/QC procedures (i.e. holding times, blind duplicate analysis, surrogate recoveries). Data points that are not adequately supported by the QA/QC procedures will be referred to the sampling team and/or the laboratory for appropriate corrective actions.

Upon completion of data validation, the results will be compared to background data points and the relevant and appropriate regulatory standards and criteria. An explanation of how this will be performed is presented below.

Data Evaluation

As previously stated, decontamination of the storage areas will be demonstrated complete by concrete chip sampling and comparison to regulatory and background levels.

Test results will be compared to the Health/Risk based target standards specified in the interim final RCRA Facility Guidance (EPA-530/SW-89-031). If any parameter exceeds the applicable target standard, then decontamination will be deemed incomplete in the area of

that sample. Decontamination efforts will continue until follow-up sample data achieves the applicable target standard.

For constituents for which a health/risk based standard is not available, comparison will be made to background data. The analytical results of these samples will be statistically analyzed using Cochran's approximation to the Behrens-Fisher Students' t-Test (40 CFR Part 264, Appendix IV). If the reported concentration of a specific constituent is the method detection limit, the numerical value of the method detection limit will be used in the calculations. The mean and variance of the background samples will be used to determine if clean standard verification samples contain significant constituent concentrations at a 95 percent confidence level. If any parameter exceeds the corresponding background level, decontamination will be considered incomplete in the area of that sample. Decontamination efforts will continue until follow-up sample data achieves the corresponding background level.

D. MAXIMUM CLOSURE COST ESTIMATE

The closure costs for the two container storage areas CWTP-5 and CWTP-6 are estimated to be $269,100 and $157,950 respectively. The estimated closure cost for the planned waste storage facility is $1,228,500. The total estimated closure cost for all these areas is $1,655,550. A breakdown of these costs is included in Table H-5. All costs assume performance of closure activities by a qualified third-party contractor. The estimates assume that the maximum waste inventory will be present at closure.

The closure cost estimate will be revised whenever a change in the closure plan affects the cost of closure. The closure cost will be adjusted annually as described in 40 CFR 264.14(b).

TABLE H-5
MAXIMUM CLOSURE COST ESTIMATE

ACTIVITY DESCRIPTION	STORAGE BUILDING A CWTP-5	STORAGE BUILDING B CWTP-6	PLANNED WASTE STORAGE FACILITY
INITIAL SAMPLING & ANALYSIS	$ 12,000.00	$ 12,000.00	$ 108,000.00
REMOVE & DISPOSE OF REMAINING WASTE (1)	$ 150,000.00	$ 75,000.00	$ 500,000.00
BACKGROUND SAMPLING & ANALYSIS	$ 4,000.00	$ 4,000.00	$ 20,000.00
HEALTH & SAFETY	$ 3,000.00	$ 3,000.00	$ 3,000.00
DISMANTLE AND DISPOSE OF ABOVEGROUND TANKS AND ANCILLARY EQUIPMENT	N/A	N/A	$ 210,000.00
DECONTAMINATE CONCRETE CONTAINMENTS	$ 40,000.00	$ 20,000.00	$ 120,000.00
COLLECT AND ANALYZE CONFIRMATORY SAMPLES	$ 6,000.00	$ 6,000.00	$ 54,000.00
REMOVE AND DISPOSE OF CONTAMINATED CONCRETE (2)	$ 10,000.00	$ 10,000.00	$ 20,000.00
DATA EVALUATION & CLOSURE CERTIFICATION	$ 5,000.00	$ 5,000.00	$ 15,000.00
SUBTOTAL	$ 230,000.00	$ 135,000.00	$ 1,050,000.00
INSURANCE (7%)	16,100.00	9,450.00	73,500.00
CONTINGENCY (10%)	23,000.00	13,500.00	105,000.00
TOTAL	$ 269,100.00	$ 157,950.00	$ 1,228,500.00

NOTES: (1) ASSUMES MAXIMUM INVENTORY PRESENT AT CLOSURE
(2) ALLOWANCE FOR REMOVAL AND DISPOSAL OF CONTAMINATED CONCRETE

E. FINANCIAL ASSURANCE

The required financial assurances for closure and pollution liability coverage are presented in Exhibit H-1 in the following order:

- A letter from UTC's Executive Vice President and Chief Financial Officer, John A. Rolls, transmitting financial documentation to the DEP, dated March 29, 1980 including Exhibit A.
- A special report by Price Waterhouse, independent Certified Public Accountants, dated March 28, 1990.
- Letters from UTC's Manager of Regulatory Affairs, John E. Szwast to the EPA, Region I, Regional Administrator, dated March 29, 1990 and to CTDEP also dated, March 29, 1990.
- UTC Annual Report 1989.